CCD-TR36/TR73/TR76/TR83/TR93/TR100/ TR560/TR600/TR670/TR670PK/TR880

RMT-708

SERVICE MANUAL

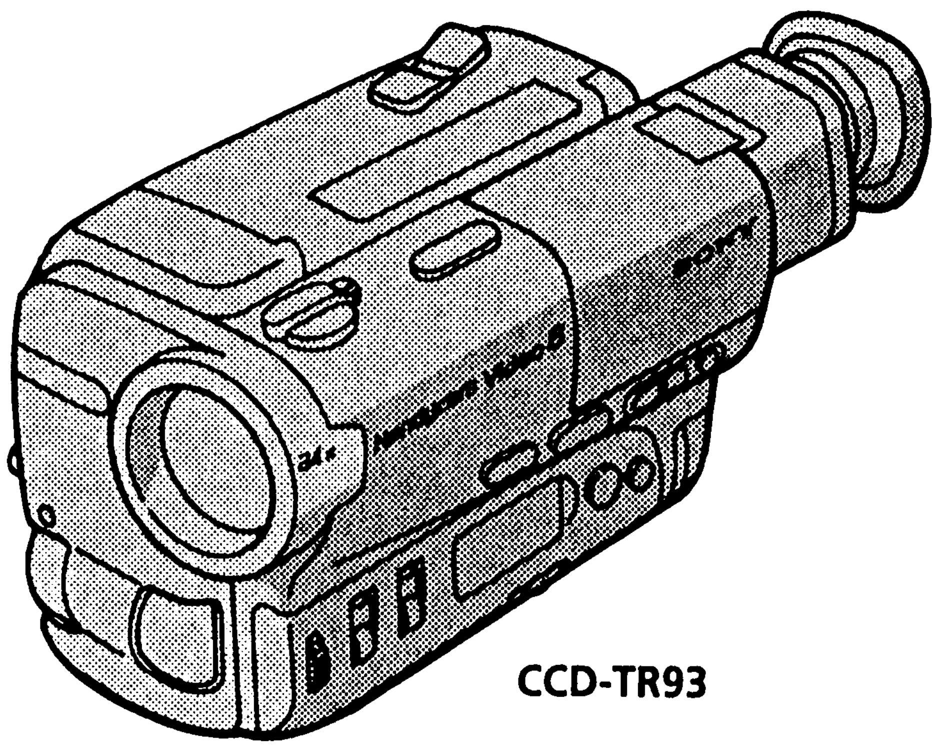
US Model
CCD-TR36/TR73/TR76/TR83/TR93/TR100/TR600

Canadian Model
CCD-TR76/TR93/TR600

E Model
CCD-TR560/TR670/TR670PK/TR880

Hong Kong Model
CCD-TR670/TR880

Tourist Model
CCD-TR880


CCD-TR93

Handycam

A MECHANISM

- CCD-TR670PK is model that carrying case are added in CCD-TR670.
- CCD-TR670PK are different from CCD-TR670 only in the accessories and packing materials.

For MECHANISM ADJUSTMENTS, refer to the "8 mm Video MECHANICAL ADJUSTMENT MANUAL IV" (9-973-199-11).

SPECIFICATIONS

System

Video recording system
Two rotary heads, Helical scanning FM system

Audio recording system
Rotary heads, FM system

Video signal
NTSC color, EIA standards

Usable cassette
8 mm video format cassette (standard 8 mm)
(CCD-TR36/TR73/TR76/TR83/TR93/TR560/TR670)
(Hi8 or standard 8 mm)
(CCD-TR100/TR600/TR880)

Tape speed
SP mode: Approx. 19/32 inches (1.43 cm)/second
LP mode: Approx. 5/16 inches (0.72 cm)/second (playback only)

Recording time
SP mode: 2 hours (E6/P6-120)

Playback time
SP mode: 2 hours (E6/P6-120)
LP mode: 4 hours (E6/P6-120)

Fastforward/rewind time
Approx. 6 min. 30 sec. (E6/P6-120)

Image device
CCD (Charge Coupled Device)

Viewfinder
See the table next page.

Lens
See the table next page.

Focal distance
See the table next page.

Color temperature
Auto

Minimum illumination
See the table next page.

Illumination range
See the table next page.

Recommended illumination
More than 100 lux

Input and Output connector

S video input/output
(CCD-TR100/TR600/TR880)
4-pin mini DIN
Luminance signal:
1 Vp-p, 75 Ω, unbalanced, sync negative
Chrominance signal:
0.286 Vp-p, 75 Ω, unbalanced

Video input * /output
Phono jack, 1 Vp-p, 75 Ω, unbalanced, sync negative

Audio input * /output
Phono jacks (2: stereo L and R)
Input: 327 mV, input impedance more than 47 kΩ
Output: 327 mV, (ac output impedance 47 kΩ)
impedance less than 2.2 kΩ
* : CCD-TR100/TR600/TR880 only

RFU DC OUT
Special minijack, DC 5V

Headphones jack
Stereo minijack

LANC control jack
Stereo mini-minijack (ϕ 2.5 mm)

MIC jack
Stereo minijack, 0.388 mV low impedance with 2.5 to 3.0V DC, output impedance 6.8 kΩ (ϕ 3.5 mm)

General

Power requirements
On battery mounting surface
6.0V (battery pack)
7.5V (AC power adaptor)

Average power consumption
See the table next page.

Installation
Vertically, horizontally

Operating temperature
32 °F to 104 °F (0 °C to 40 °C)

Storage temperature
–4 °F to +140 °F
(–20 °C to +60 °C)

Dimensions
See the table next page.

Mass
See the table next page.

Microphone
Electret condenser microphone, stereo type

— Continued on next page —

MICROFILM

8 VIDEO CAMERA RECORDER
CCD-TR36/TR76/TR76/TR83/TR93/TR560/TR670/TR670PK

Hi8 VIDEO CAMERA RECORDER
CCD-TR100/TR600/TR880

SONY®

	TR36	TR73	TR76	TR83	TR93	TR100	TR560	TR600	TR670	TR880	Notes
Viewfinder	mono-chrome	color		mono-chrome	color	mono-chrome	color				—
Lens	12×			24× (Digital) 12× (Optical)		12×		24× (Digital) 12× (Optical)	48× (Digital) 12× (Optical)		Combined power zoom lens, filter diameter 2 1/8 inches (37 mm), TTL autofocus system, inner focus wide macro system
Focal distance	7/32 – 2 5/8 inches (5.4 – 64.8 mm)										9/32 – 3 1/8 inches (6.5 – 78 mm) when recording (**TR83/TR93/TR600/ TR670/TR880** only)
	1 9/16 – 18 1/2 inches (39 – 468 mm)										When converted to a 35 mm still camera 1 7/8 – 22 1/4 inches (47 – 564 mm) when recording (**TR83/TR93/TR600/ TR670/TR880** only)
Minimum illumination	0.8 lux			3 lux			0.8 lux	3 lux			F1.8
Illumination range	0.8 lux to 100,000 lux			3 lux to 100,000 lux			0.8 lux to 100,000 lux	3 lux to 100,000 lux			—
Average power consumption	5.1W	5.3W		5.7W	5.9W	5.5W	5.3W	5.9W			During camera recording
Dimensions (Approx.)	4 1/2×4 3/8 × 8 1/8 inches (114×110 ×206 mm)	4 1/2×4 3/8× 8 1/8 inches (114×110 ×209 mm)		4 1/2×4 3/8 × 8 1/8 inches (114×110 ×206 mm)	4 1/2×4 3/8 × 8 1/4 inches (114×110 ×209 mm)	4 1/2×4 3/8 × 8 1/8 inches (114×110 ×206 mm)	4 1/2×4 3/8× 8 1/4 inches (114×110 ×209 mm)				w×h×d
Mass (Approx.)	1 lb 15 oz (890g)			2 lb (900g)			1 lb 15 oz (890g)	2 lb (910g)	2 lb (900g)	2 lb (910g)	Excluding the battery pack, lithium battery, cassette and shoulder strap
	2 lb 7 oz (1,110g)			2 lb 7 oz (1,120g)			2 lb 7 oz (1,110g)	2 lb 7 oz (1,130g)	2 lb 7 oz (1,120g)	2 lb 7 oz (1,130g)	Including the battery pack NP-55, lithium battery CR2025, cassette E6/P6-120, and shoulder strap

AC power adaptor

Power requirements
110 – 240V AC*, 50/60 Hz

Power consumption
AC-V25A/V25B: 17W
AC-V25C: 18W

Output voltage
DC OUT:
AC-V25A/V25B: 7.5V, 1.5A
AC-V25C: 7.5V, 1.6A
in operating mode
Battery charge terminal:
10V, 1.1A in charge mode

Application
Sony battery packs NP-55, NP-80/80D, NP-77H, NP-68, NP-66H, NP-C65, NP-60D

Operating temperature
32 °F to 104 °F (0 ℃ to 40 ℃)

Storage temperature
-4 °F to +140 °F
(-20 ℃ to +60 ℃)

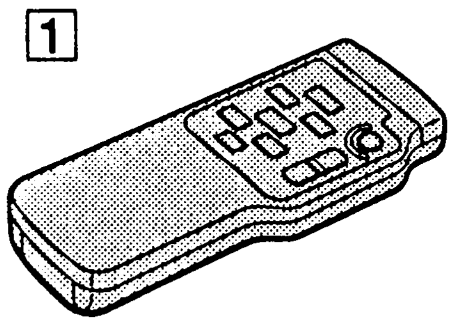
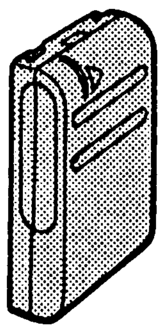
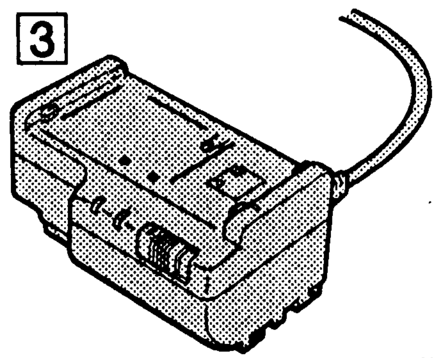
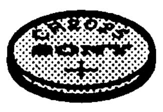
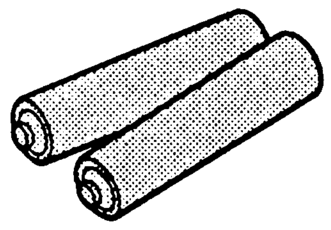
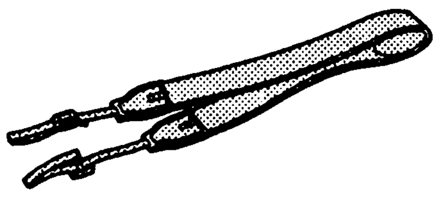
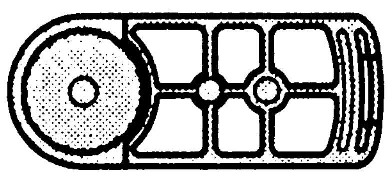
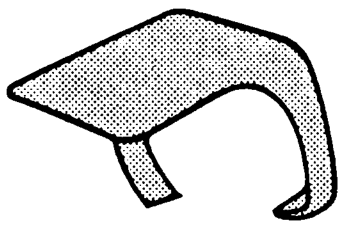
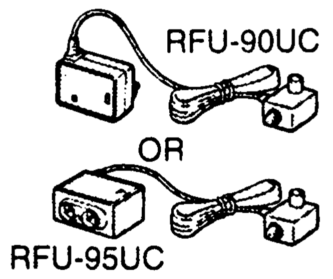
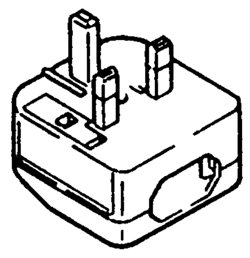
Dimensions
Approx.
4 1/8×1 15/16×2 1/2 inches
(103×49×63 mm) (w/h/d)
including projecting parts
and controls

Mass
AC-V25A: Approx. 11 oz (320g)
AC-V25B/V25C:
Approx. 10 oz (300g)

* Canadian Standard Association (CSA) certifies 120V AC only.

Design and specifications are subject to change without notice.

Supplied accessories

1 	2 	3 	4 
5 	6 	7	8
9 	10 	11 	12 

1 **Wireless Remote Commander** (1)
2 **NP-55 Battery pack** (1)
3 **AC-V25A/V25B/V25C AC power adaptor** (1)
4 **CR2025 Lithium Battery** (1)
(The lithium battery is already installed in your camcorder.)
5 **Size AA (R6) battery for Remote Commander** (2)
6 **Shoulder strap** (1)
7 **A/V connecting cable** (1)
8 **S video connecting cable**
(CCD-TR100/TR600/TR880 only) (1)
9 **Tripod adaptor (1)**
10 **Shading cover**
(CCD-TR73/TR76/TR93/TR560/TR600/TR670/TR880 only) (1)
11 **RFU-90UC/95UC RFU adaptor** (1)
(CCD-TR560: E/TR670: E/TR670PK)
12 **AC CONVERSION ADAPTOR** (1) **(Hong Kong** Model)

Table for difference of functions

Model		TR36	TR73	TR76	TR83	TR93	TR100	TR560	TR600	TR670	TR880
Destination		US	US	US, CND	US	US, CND	US	E	US, CND	E, HK	E, HK, JE
Hi8							○		○		○
Steady Shot					○	○			○	○	○
Zoom (X)	Optical	12	12	12	12	12	12	12	12	12	12
	Digital				24	24			24	48	48
Viewfinder		W/B	Color	Color	W/B	Color	W/B	Color	Color	Color	Color
Exposure							○		○		○
Backlight		○	○	○	○	○		○		○	
Picture Effect		5 mode		5 mode	7 mode	7 mode	5 mode	5 mode	7 mode	7 mode	7 mode
Line In Jack (VTR REC)							○		○		○

- abbreviation

CND	: Canadian model
HK	: Hong Kong model
JE	:Tourist model

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit board Repairing
   - Keep the temperature of the soldering iron around 270°C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

[Zoom lens]

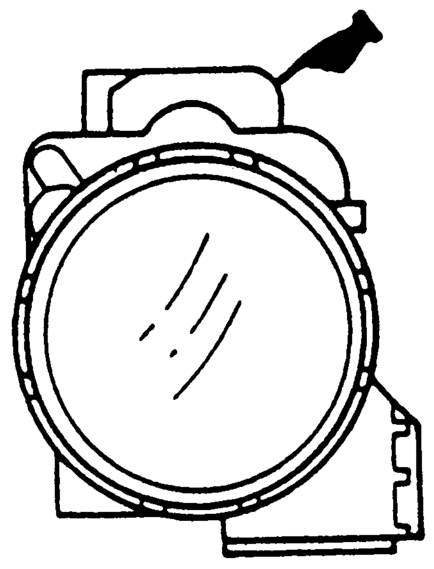
This unit employs three types of lens.
Note that the lenses are interchangeable, however their components are not.

Differentiating the lens

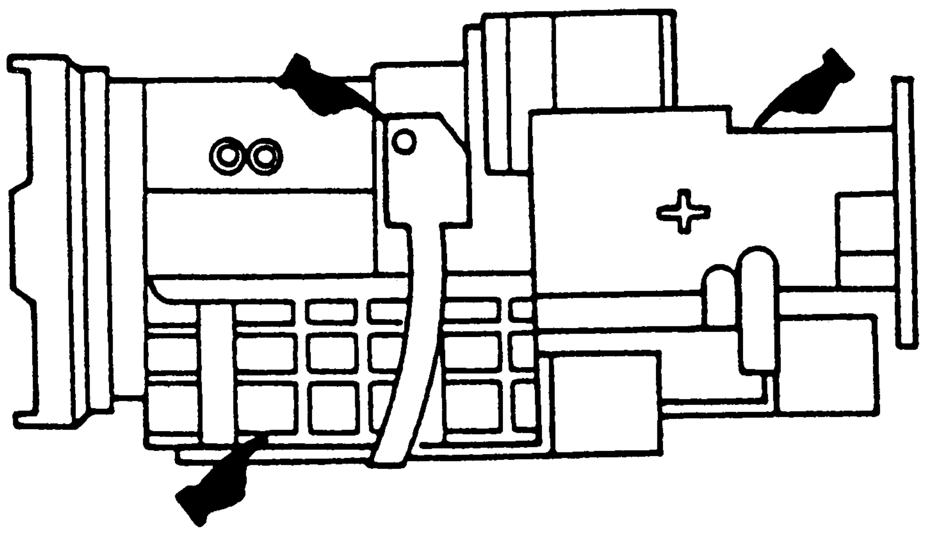
☛ : difference point

TYPE I (LSV-140A)

From the front of the lens

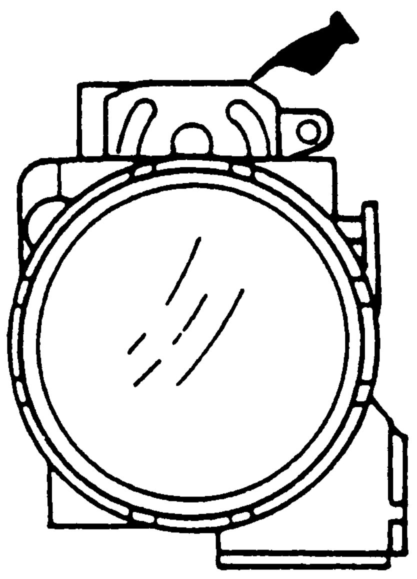


From the right side of the lens (as seen from the front)

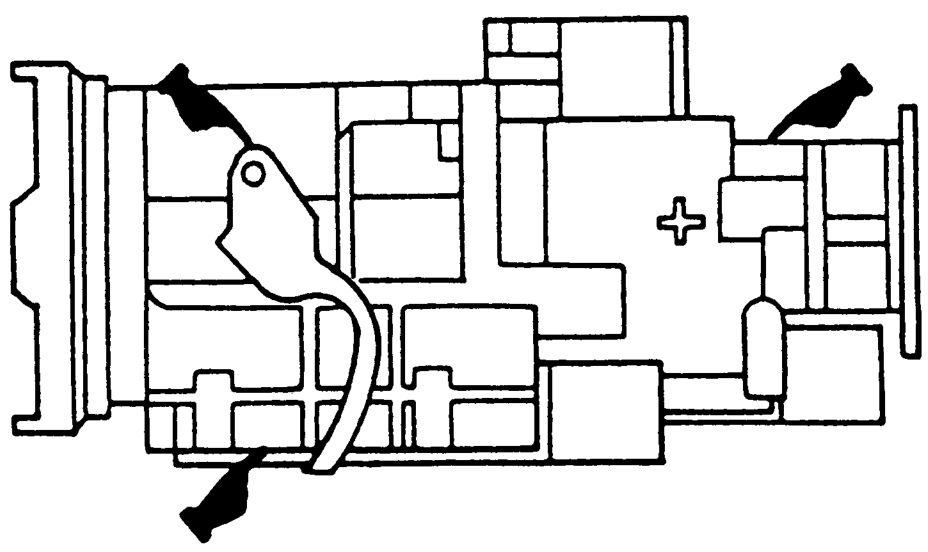


TYPE II (VCL-5412WA)

From the front of the lens

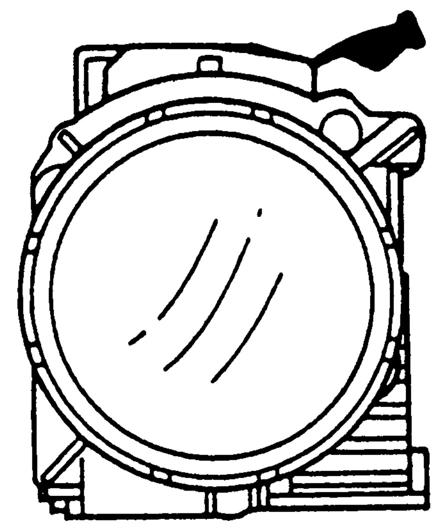


From the right side of the lens (as seen from the front)

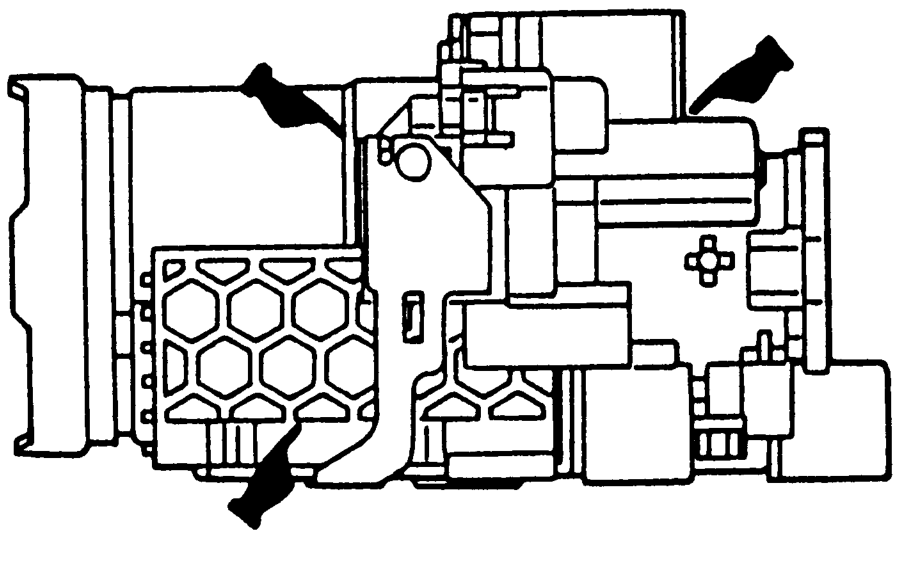


TYPE III (VCL-5412WB)

From the front of the lens



From the right side of the lens (as seen from the front)



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There is the color reproduction standard frame at the back of the book.

SERVICE NOTE

[SEMICONDUCTOR FOR CORRECTION LIST DISPLAY]

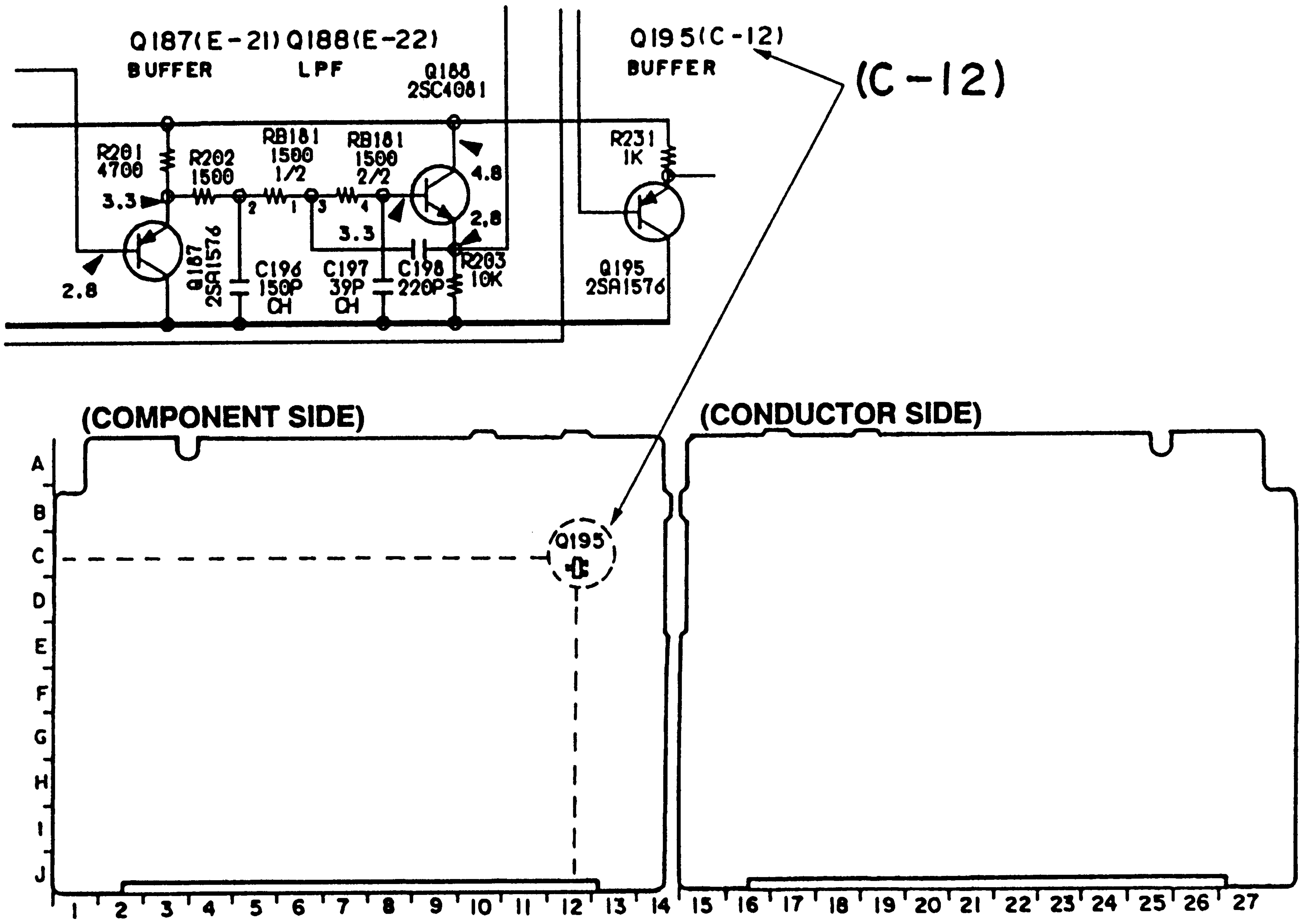
Part code and part name of the semiconductor for correction of the print board is discribed in the space of each print figure. Use this list when ordering parts.

[PARTS LOCATION DIAGRAM RELATED TO POWER SUPPLY]

The parts location diagram for the power supply which are often checked and replaced when repairing the fuse and IC link and so on. (See page 4–36, 4–37 and 4–71.)
This diagram is useful for repair.

[SEMICONDUCTOR LOCATION]

In this service manual, the mounted locations of the semiconductors (IC, transistor, diodes) are indicated in red in schematic diagrams. This enables to find the location on the board easily when servicing.



[HEAD CLEANING]

After an extended period of use the video image may become indistinct or may not appear at all during playback of a tape. The cause of this usually are dirty video heads. For remedy, cleaning of the heads is required.

Check for Head Clogs During Recording

① Use a blank tape, record a short section, then press the stop button to stop.
② Set to recording mode again.
③ If the [⊗] mark is flashing in the viewfinder at this time, head clogs are occurred.

Check During Playback of a Tape

① Play back a pre-recorded tape and display the image on a TV screen.
② If there is no sound and the image is unstable, no image appears on the screen, or tape transport is unstable, head clogs are occurred.

Remedy

[Cleaning method using a cleaning tape]

- Use the Cleaning Tape. (Please follow the instructions attached to the cleaning tape.)

CCD-TR36/TR73/TR76/TR83/TR93/TR100/TR560/TR600/TR670/TR670PK/TR880

SECTION 1
GENERAL

This section is extracted from instruction manual of CCD-TR36/TR73/TR76/TR83/TR93.

Before You Begin

Checking Your Model Number

The instructions in this manual are for the five models listed below. Before you start reading this manual and operating the unit, check your model number by looking at the bottom of your camcorder. The CCD-TR93 is the model used for illustration purposes. Otherwise, the model name is indicated in the illustrations. Any differences in operation are clearly indicated in the text, for example, "CCD-TR36 only."
As you read through this manual, buttons and settings on the camcorder are shown in capital letters.
e.g. Set the POWER switch to CAMERA.

Types of differences

Model number	Steady Shot	Picture Effect	Viewfinder		Zoom (x)
			Monochrome	Color	
CCD-TR36*		5 modes	•		12
CCD-TR73*				•	12
CCD-TR76		5 modes		•	12
CCD-TR83	•	7 modes	•		24 (Digital)
CCD-TR93	•	7 modes		•	24 (Digital)

* **CCD-TR36/TR73** are the U. S. A. models.

Note on TV Color Systems

TV color systems differ from country to country. To view your recordings on a TV, you need an NTSC system-based TV. When you want to use a PAL-M system-based TV, you will need an NTSC/PAL-M transcoder (as this is an NTSC system based camcorder). Please check the list on page 39 to find out the TV color system used in your country.

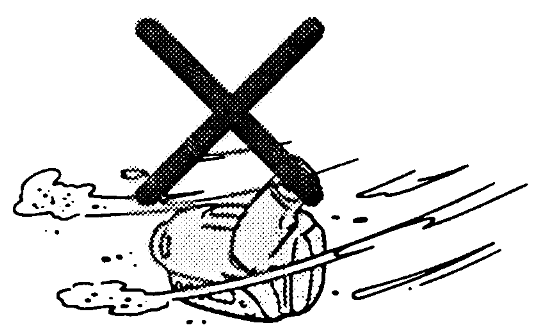
Precaution on Copyright

Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

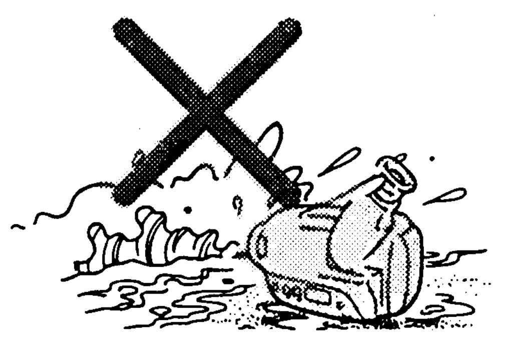
Precautions on Camcorder Care

- **Do not let sand get into the camcorder. When you use the camcorder on a sandy beach or dusty place, protect it from the sand or dust. Sand or dust may cause the unit to malfunction and sometimes the malfunction cannot be repaired [a].**
- **Do not let the camcorder get wet. Keep the camcorder away from rain and sea water. Letting the camcorder get wet may cause the unit to malfunction and sometimes the malfunction cannot be repaired [b].**
- **Never leave the camcorder exposed to temperatures above 140 °F (60 °C), such as in a car parked in the sun or under direct sunlight [c].**

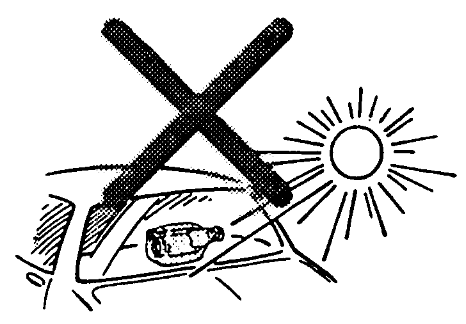
[a]



[b]

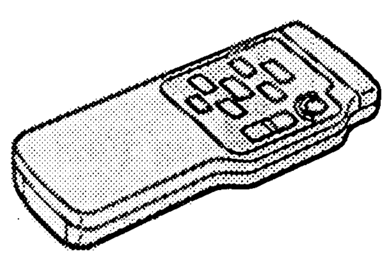
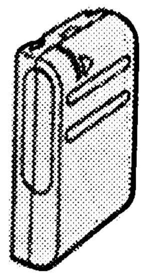
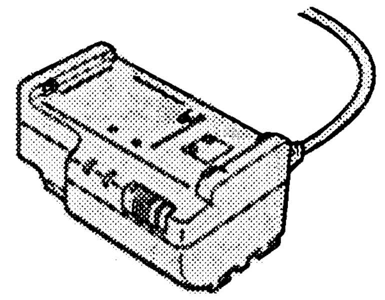
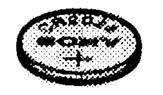
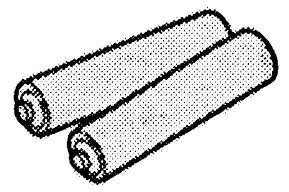
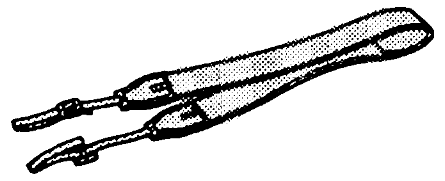
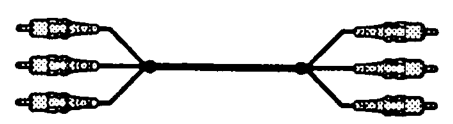
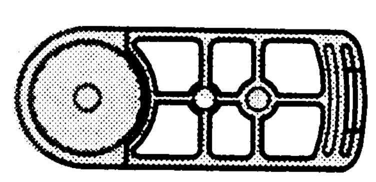
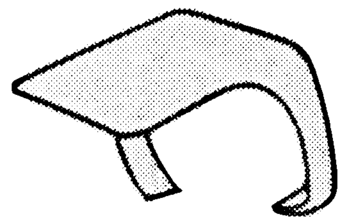


[c]



Checking Supplied Accessories

Check that the following accessories are supplied with your camcorder.

1 	2 	3 
4 	5 	6 
7 	8 	9 

1 **Wireless Remote Commander** (1) (p. 48)
2 **NP-55 Battery pack** (1) (p. 6)
3 **AC-V25A/V25B/V25C AC power adaptor** (1) (p. 6, 18)
4 **CR2025 Lithium Battery** (1) (p. 31)
(The lithium battery is already installed in your camcorder.)
5 **Size AA (R6) battery for Remote Commander** (2) (p. 48)
6 **Shoulder strap** (1) (p. 47)
7 **A/V connecting cable** (1) (p. 15)
8 **Tripod adaptor** (1) (p. 13)
9 **Shading cover** (**CCD-TR73/TR76/TR93** only) (1)

Contents of the recording cannot be compensated if recording or playback is not made due to a malfunction of the camcorder, video tape, etc.

Getting Started

Charging and Installing the Battery Pack

Before using your camcorder, you first need to charge and install the battery pack. To charge the battery pack, use the supplied AC power adaptor.

Charging the Battery Pack

Charge the battery pack on a flat surface without vibration.

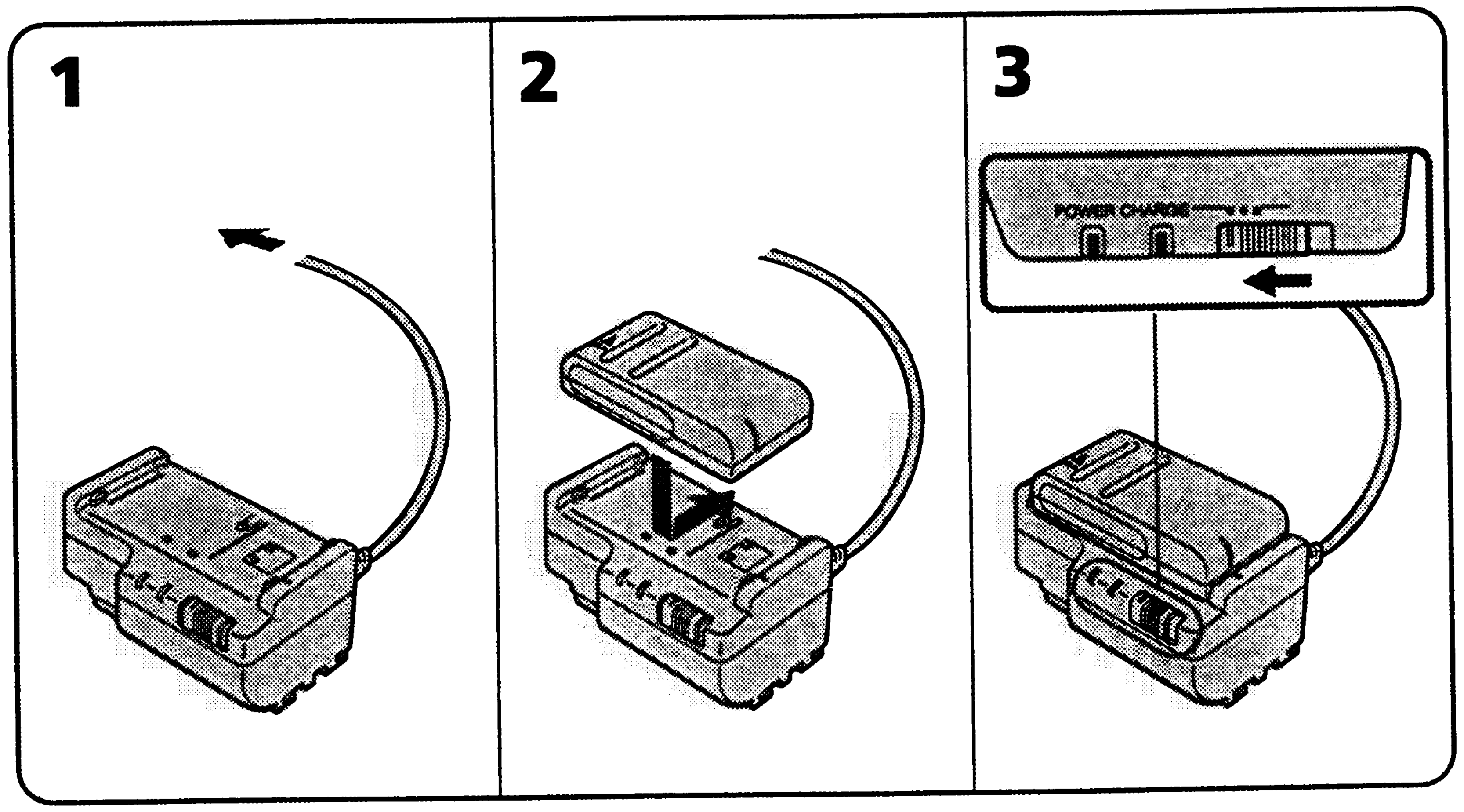
(1) Connect the power cord to a wall outlet.

(2) Align the right side of the battery pack with the line on the AC power adaptor, then slide the battery pack in the direction of the arrow.

(3) Set the selector to CHARGE. The CHARGE lamp (orange) lights up. Charging begins.

When charging is completed, the CHARGE lamp goes out. Set the selector to the center position and unplug the unit from the wall outlet. Then remove the battery pack and install it on the camcorder.

To stop charging, set the selector to the center position.



Charging Time

Battery pack	NP-55 (supplied)	NP-80 NP-80D	NP-77H	NP-68 NP-66H	NP-C65	NP-60D
Charging time*	70	190	170	125	105	90

* Approximate minutes to charge an empty battery pack using the supplied AC power adaptor. (Lower temperatures require a longer charging time.)

Battery Life

CCD-TR36

Battery pack	NP-55 (supplied)	NP-80 NP-80D	NP-77H	NP-68 NP-66H	NP-C65	NP-60D
Typical recording time**	30	85	85	65	45	40
Continuous recording time***	60	165	160	115	90	80

CCD-TR73/TR76

Battery pack	NP-55 (supplied)	NP-80 NP-80D	NP-77H	NP-68 NP-66H	NP-C65	NP-60D
Typical recording time**	30	80	80	60	45	40
Continuous recording time***	60	160	150	110	85	80

CCD-TR83

Battery pack	NP-55 (supplied)	NP-80 NP-80D	NP-77H	NP-68 NP-66H	NP-C65	NP-60D
Typical recording time**	30	75	75	55	40	35
Continuous recording time***	55	145	140	105	80	70

CCD-TR93

Battery pack	NP-55 (supplied)	NP-80 NP-80D	NP-77H	NP-68 NP-66H	NP-C65	NP-60D
Typical recording time**	25	70	70	50	40	35
Continuous recording time***	50	140	135	100	75	65

** Approximate minutes when recording while you repeat recording start/stop or zooming and turning the power on/off. The actual battery life may be shorter.

*** Approximate continuous recording time indoors.

Important!

Use the battery completely before re-charging!

Before you recharge the battery pack, make sure the battery has been used up (discharged) completely. Repeated charging while some capacity remains causes a lowering of battery capacity. However, the original battery capacity can be recovered if you use the battery completely and charge it fully again.

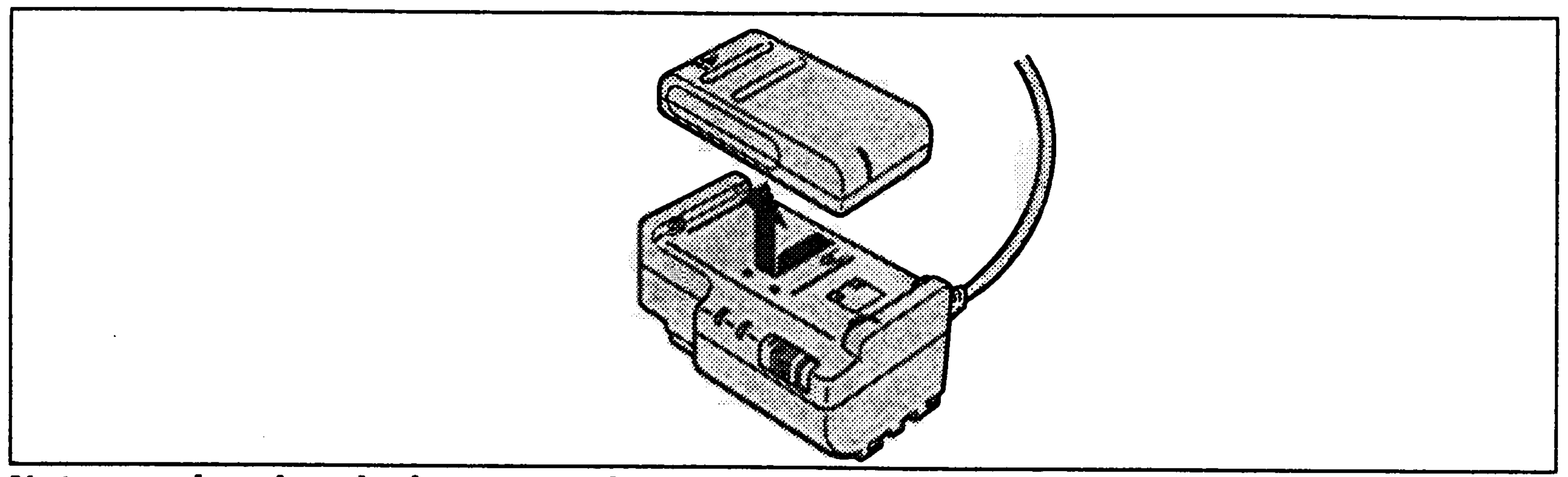
To use up the battery, remove the cassette and turn the POWER switch to CAMERA with the battery pack attached, and leave the camcorder until the ▭ indicator flashes and the red lamp flashes rapidly in the viewfinder.

See the next page for further information.

Charging and Installing the Battery Pack

Removing the Battery Pack

Slide the battery pack in the direction of the arrow.

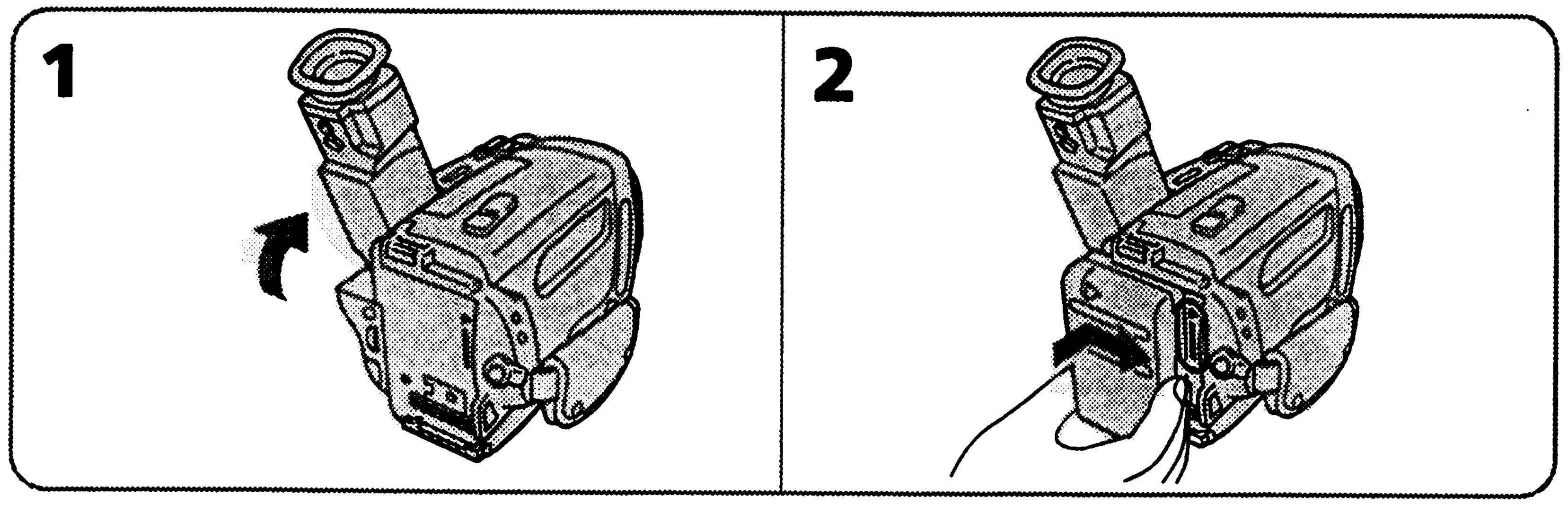


Notes on charging the battery pack

- The POWER lamp will remain lit for a while even if the battery pack is removed and the power cord is unplugged after charging the battery pack. This is normal.
- If the POWER lamp does not light, set the selector to the center position and disconnect the power cord. After about one minute, reconnect the power cord and set the selector to CHARGE again.
- You cannot operate the camcorder using the AC power adaptor while charging the battery pack.

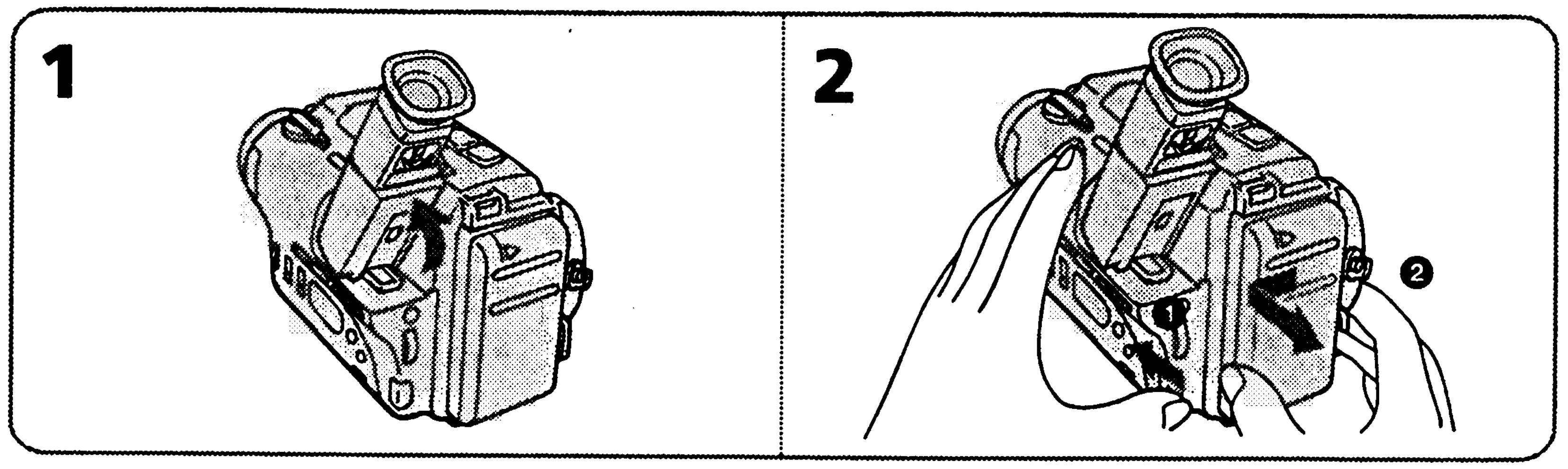
Installing the Battery Pack

(1) Lift up the viewfinder.
(2) Align the right side of the battery pack with the white line on the camcorder, and slide the battery pack to the right.



Removing the Battery Pack

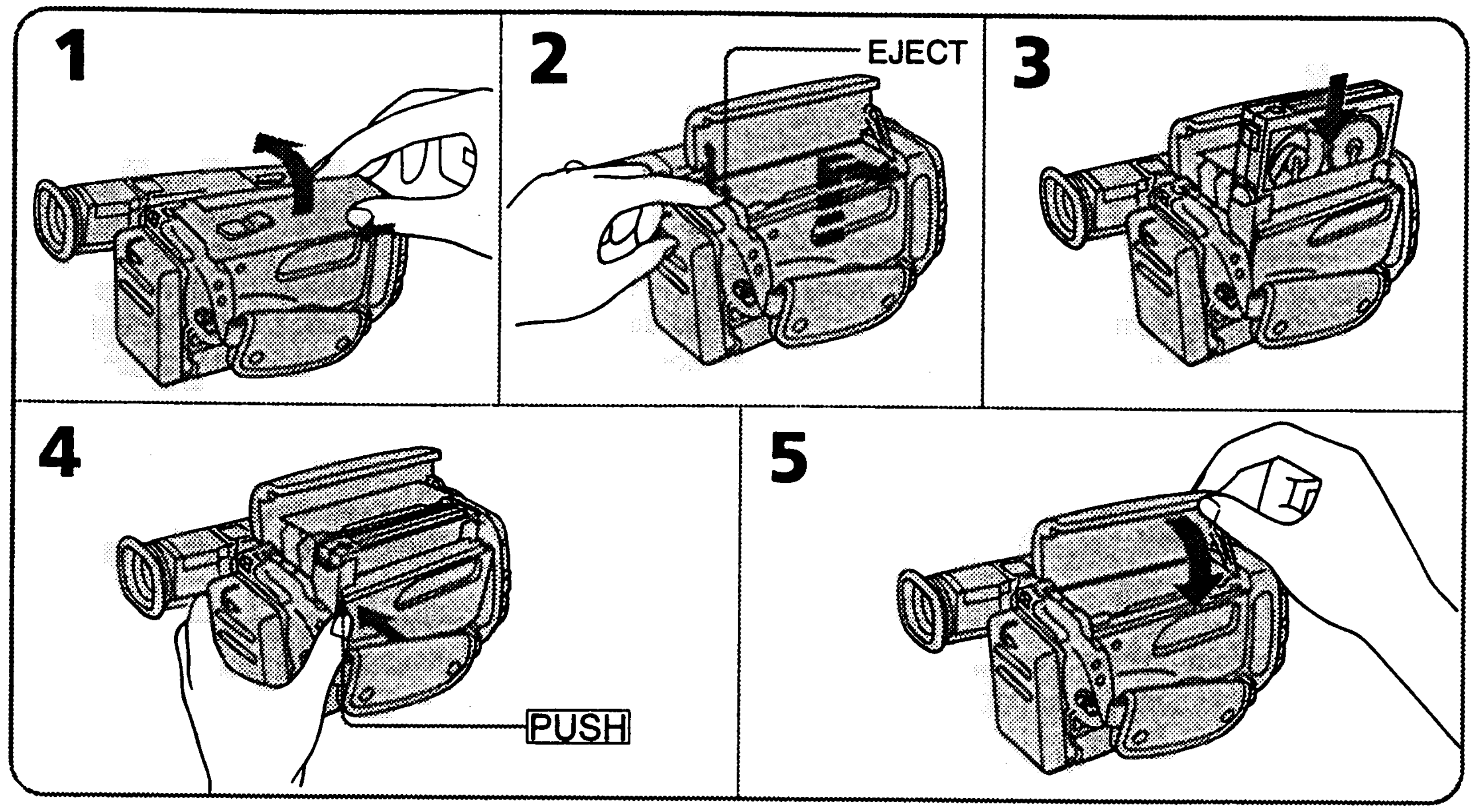
(1) Lift up the viewfinder.
(2) While pressing BATT, slide the battery pack to the left.



Inserting a Cassette

Make sure that the power source is installed.

(1) While sliding the release knob in the direction of the arrow, lift up the lid.
(2) Press EJECT. The cassette compartment automatically lifts up and opens.
(3) Insert a cassette with the window facing out.
(4) Close the cassette compartment by pressing the "PUSH" mark on the cassette compartment. The cassette compartment automatically goes down.
(5) Close the lid.

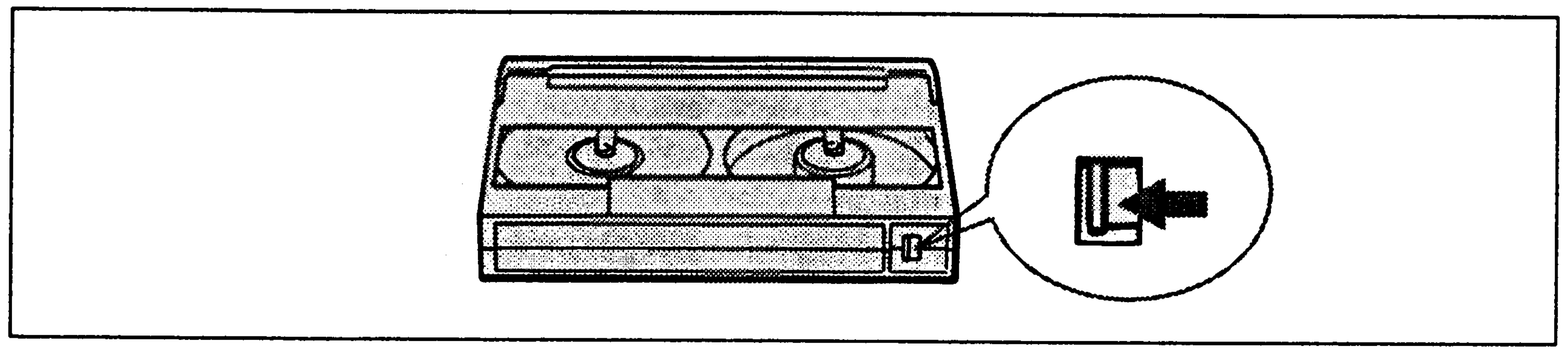


To Eject the Cassette

While sliding the release knob in the direction of the arrow, lift up the lid of the cassette holder and press EJECT.

To Prevent Accidental Erasure

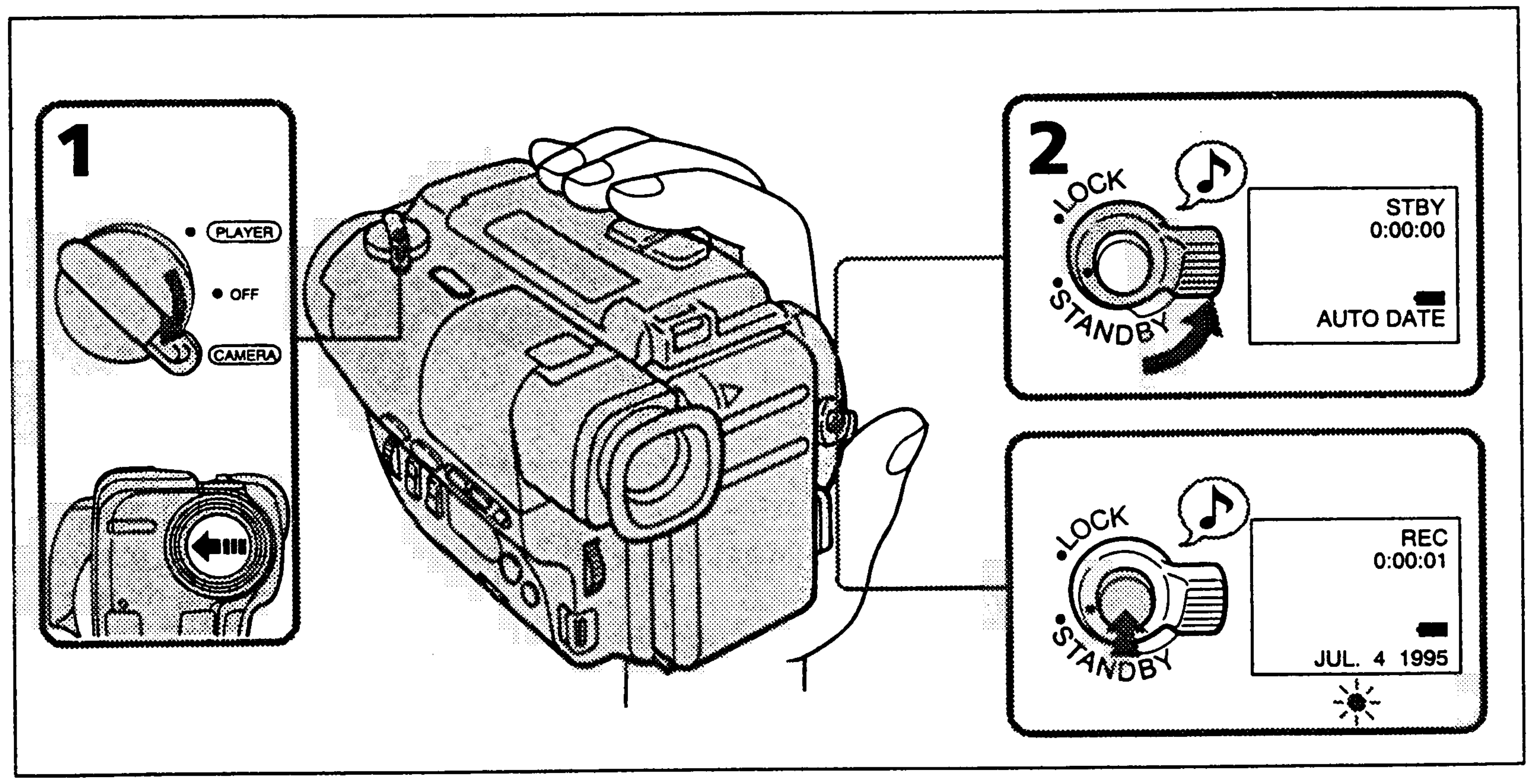
Slide the tab on the cassette to expose the red mark. If you try to record with the red mark exposed, the 📼 and ⏏ indicators flash in the viewfinder, and you cannot record.
To re-record on this tape, slide the tab back out covering the red mark.



Camera Recording

Make sure that the power source is installed and a cassette is inserted. The date is automatically recorded for 10 seconds after you start recording (AUTO DATE feature). This feature works only once a day.
Before you record one-time events, you may want to make a trial recording to make sure that the camcorder is working correctly.

(1) While pressing the small green button on the POWER switch, turn it to CAMERA.
(2) Turn STANDBY up.
(3) Press START/STOP. The camcorder starts recording. The "REC" indicator appears and the red lamp lights up in the viewfinder. The camera recording/battery lamp also lights up.

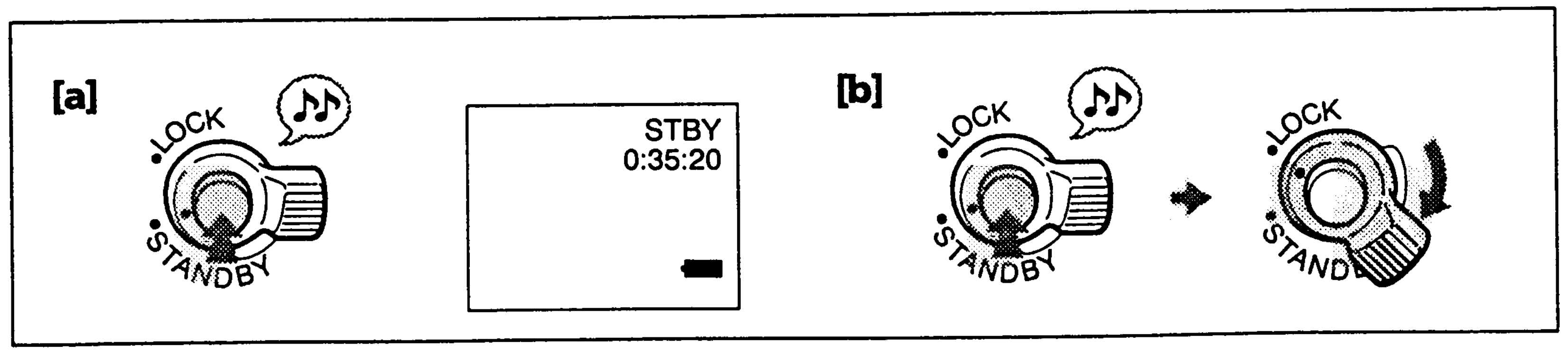


To Stop Recording Momentarily [a]

Press START/STOP again. The "STBY" indicator appears in the viewfinder (**Standby mode**).

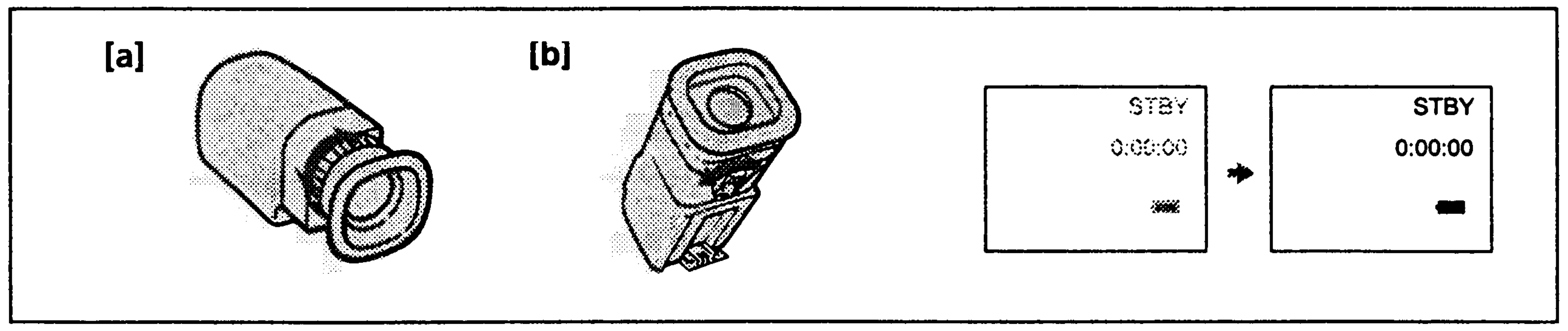
To Finish Recording [b]

Press START/STOP again. Turn STANDBY down and turn the POWER switch to OFF. Then, eject the cassette (p. 9).



To Focus the Viewfinder Lens

If you cannot see the indicators in the viewfinder clearly, or after someone else has used the camcorder, focus the viewfinder lens.
When using a monochrome viewfinder, turn the viewfinder lens adjustment ring so that the indicators in the viewfinder come into sharp focus **[a]**. When using a color viewfinder, move the viewfinder lens adjustment lever so that the indicators in the viewfinder come into sharp focus **[b]**.



Note on Standby mode

If you leave the camcorder in Standby mode for 5 minutes while the cassette is inserted, the camcorder turns off automatically. This prevents wearing down the battery and wearing out the tape. To resume Standby mode, turn STANDBY down once and turn it up again. To start recording, press START/STOP.

Note on recording

When you record from the beginning of a tape, run the tape for about 15 seconds before starting the actual recording. This will ensure that you won't miss any start-up scenes when you play back the tape.
You can record tapes in SP (standard play) mode only.

Note on the tape counter

The tape counter indicates the recording or playback time. Use it as a guide. There will be a time lag of several seconds from the actual time. To set the counter to zero, press COUNTER RESET.

Note on beep sound

As indicated with ♪ in the illustrations, a beep sounds when you turn the power on or when you start recording and two beeps sound when you stop recording, confirming the operation. Several beeps also sound as a warning of any unusual condition of the camcorder (p. 51).
Note that the beep sound is not recorded on the tape. If you do not want to hear the beep sound, select "OFF" in the menu system.

Note on the AUTO DATE feature

The clock is set to the East Coast Standard Time at the factory, but you can reset the clock in the menu system (p. 32). You can change the AUTO DATE settings by selecting ON or OFF in the menu system.
The AUTO DATE feature works once a day. However, the date may automatically appear more than once a day when:

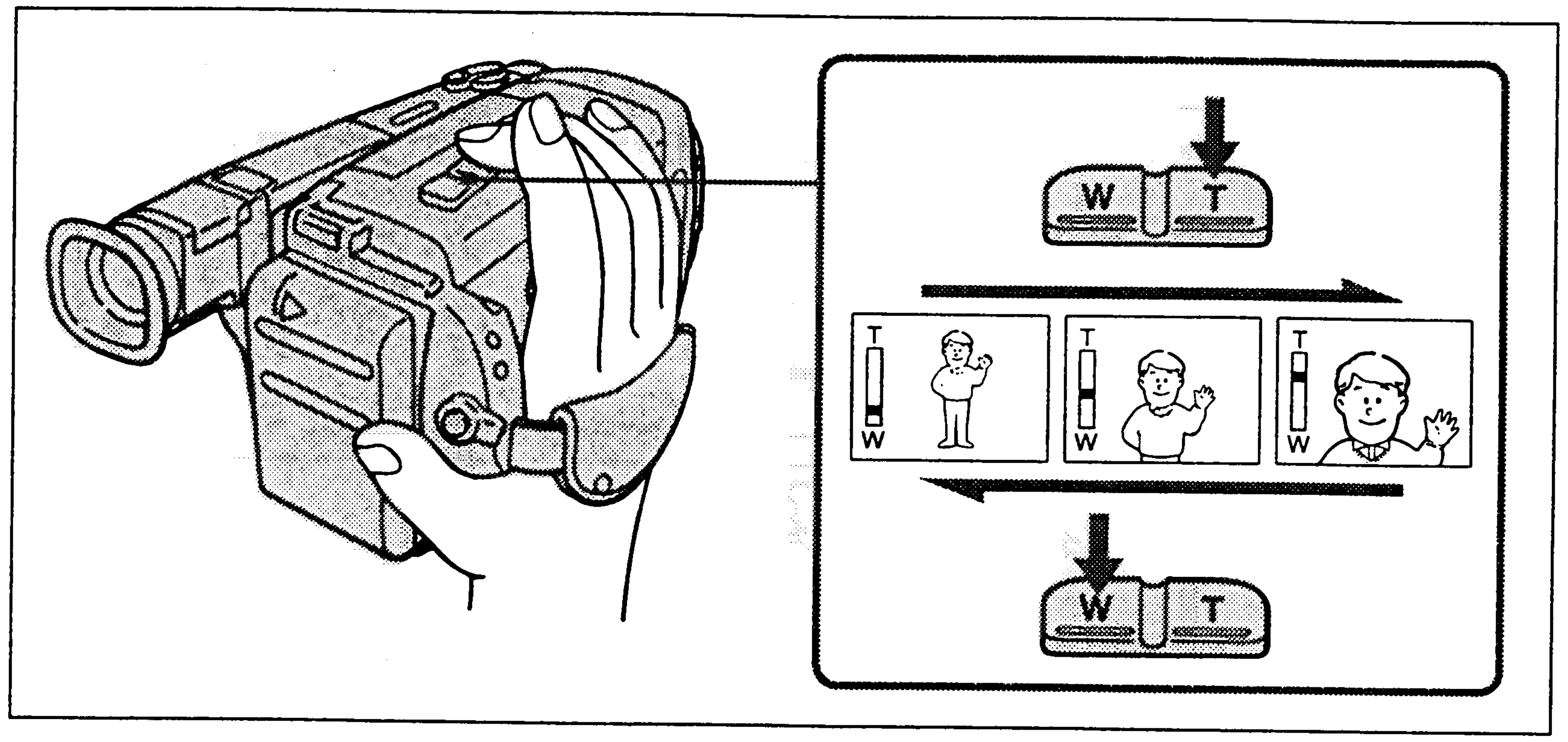
- you reset the date and time.
- you eject and insert the tape again.
- you stop recording within 10 seconds.
- you set AUTO DATE to OFF once and set to ON again in the menu system.

When moving from indoors to outdoors (or vice versa)

Turn STANDBY up and point the camcorder at a white object for about 15 seconds so that the white balance is properly adjusted.

Using the Zoom Feature

Zooming is a recording technique that lets you change the size of the subject in the scene.
For more professional-looking recordings, use the zoom function sparingly.
"T" side: for telephoto (subject appears closer)
"W" side: for wide-angle (subject appears farther away)



Zooming Speed (Dual speed zooming)

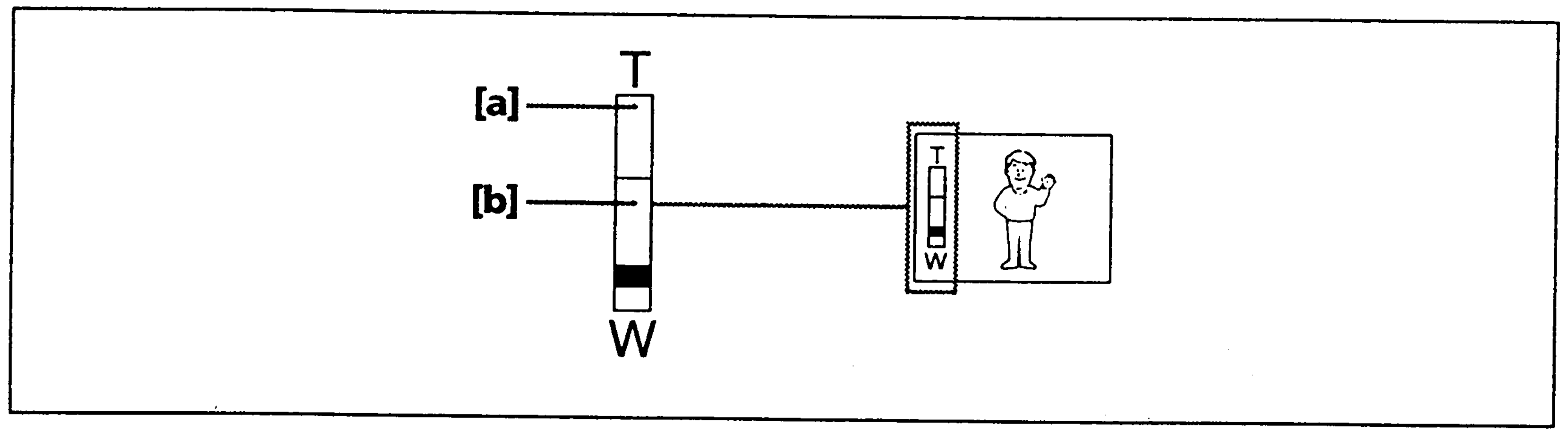
Press the power zoom button firmly for a high-speed zoom, press it softly for a relatively slow zoom.

When you shoot a subject using a telephoto zoom

If you cannot get a sharp focus while in extreme telephoto zoom, press the "W" side of the power zoom button until the focus is sharp. You can shoot a subject that is at least about 3 1/4 feet (100 cm) away from the lens surface in the telephoto position, or about 1/2 inches (1 cm) in the wide-angle position.

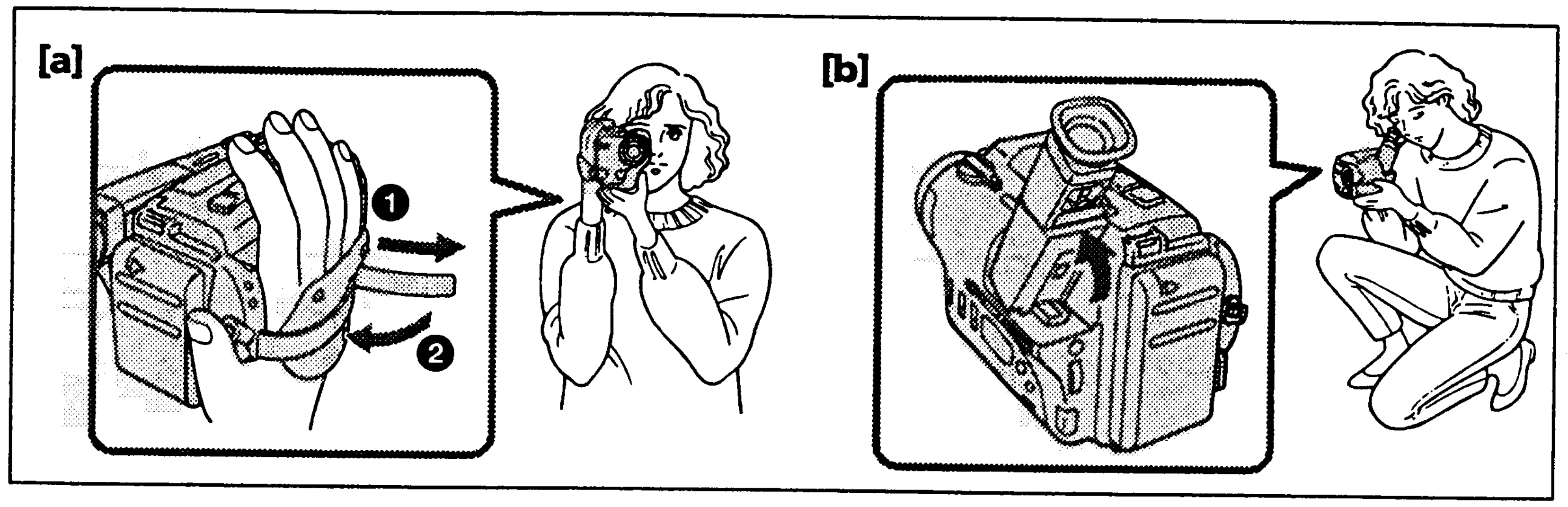
Notes on Digital Zoom (CCD-TR83/TR93 only)

- More than 12x zoom is performed digitally, and the picture quality deteriorates as you go toward the T side. If you do not want to use the digital zoom, set the D ZOOM function to OFF in the menu system (p. 29).
- The horizontal bar in the power zoom indicator separates the digital zooming zone (above the bar **[a]**) and the optical zooming zone (under the bar **[b]**). If you set the D ZOOM function to OFF, the part above the bar disappears.



Hints for Better Shooting

For hand-held shots, you'll get better results by holding the camcorder according to the following suggestions:



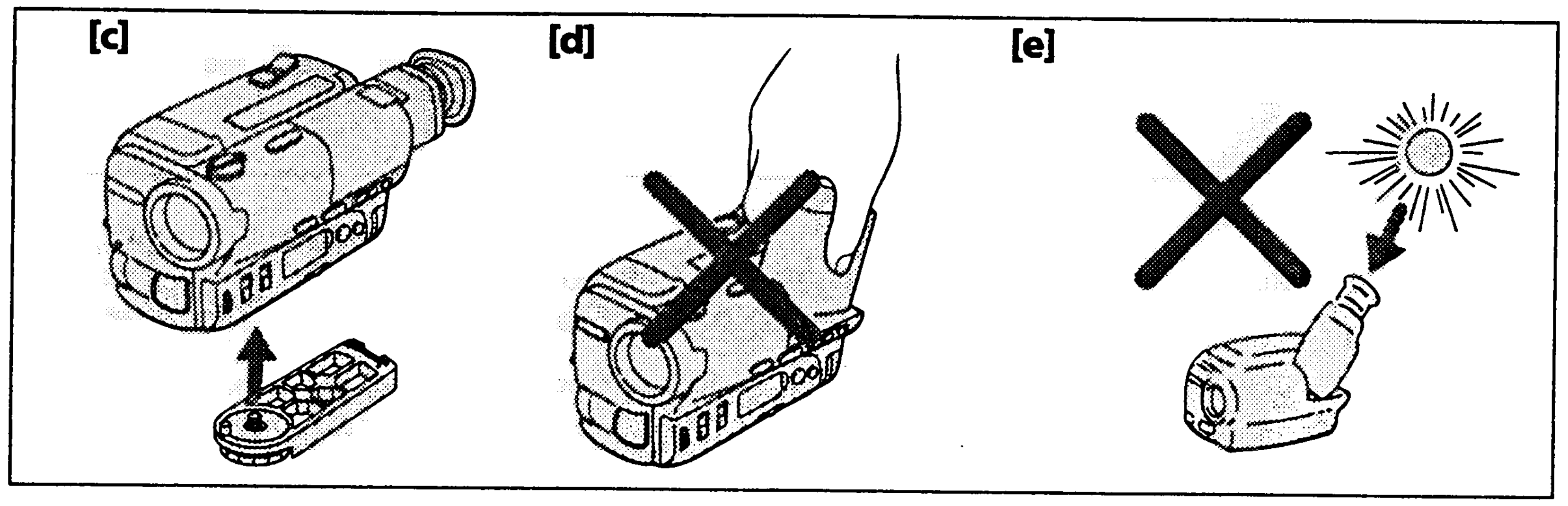
- Hold the camcorder firmly and secure it with the grip strap so that you can easily manipulate the controls with your thumb **[a]**.
- Place your right elbow against your side.
- Place your left hand under the camcorder to support it.
- Place your eye firmly against the viewfinder eyecup.
- Use the viewfinder frame as a guide to determine the horizontal plane.
- You can also record in a low position to get an interesting recording angle. Lift the viewfinder up for recording from a low position **[b]**.

Place the camcorder on a flat surface or use a tripod

Try placing the camcorder on a table top or any other flat surface of suitable height. If you have a tripod for a still camera, you can also use it with the camcorder (p. 46).
If the camcorder is difficult to balance on a tripod, use the supplied tripod adaptor. Attach the tripod adaptor to the camcorder by turning the screw **[c]**. The adaptor has a screw hole for a tripod. Do not leave the tripod adaptor on the camcorder if the camcorder is not mounted on a tripod.
When attaching a non-Sony tripod, make sure that the length of the tripod screw is less than 9/32 inches (6.5 mm). Otherwise, the screw may damage the inner parts of the camcorder.

Cautions on the viewfinder

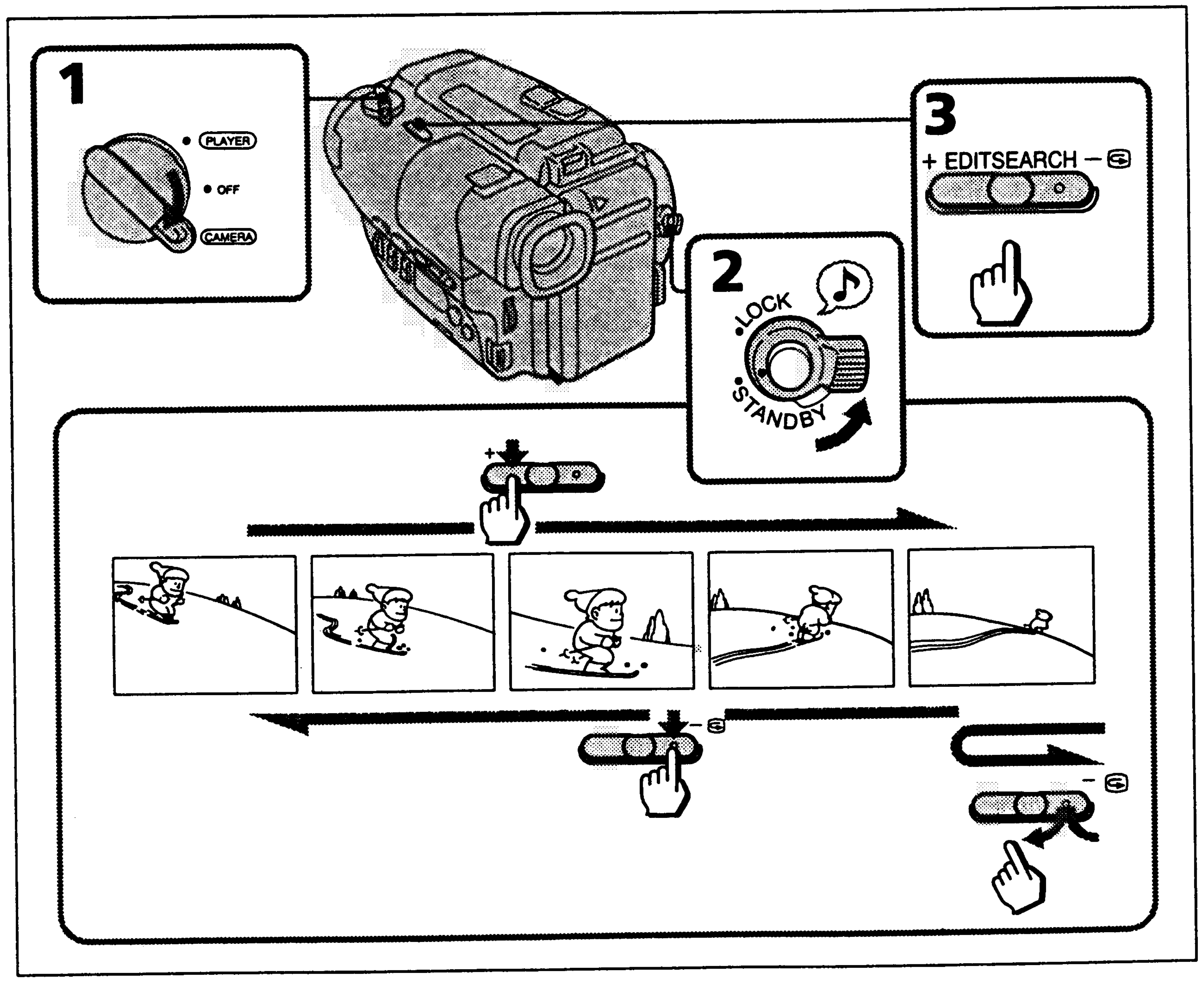
- Do not pick up the camcorder by the viewfinder **[d]**.
- Do not place the camcorder so as to point the viewfinder toward the sun. The inside of the viewfinder may be deformed. Be careful when placing the camcorder under sunlight or by the window **[e]**.



Checking the Recorded Picture

Using EDITSEARCH, you can review the last recorded scene or check the recorded picture in the viewfinder.

(1) While pressing the small green button on the POWER switch, turn it to CAMERA.
(2) Turn STANDBY up.
(3) Press the – (⊜) side of EDITSEARCH momentarily; the last few seconds of the recorded portion plays back (**Rec Review**).
Hold down the – side of EDITSEARCH until the camcorder goes back to the scene you want. The last recorded portion is played back. To go forward, hold down the + side (**Edit Search**).



To Stop Playback

Release EDITSEARCH.

To Begin Re-recording

Press START/STOP. Re-recording begins from the point you released EDITSEARCH. Provided you do not eject the tape, the transition between the last scene you recorded and the next scene you record will be smooth.

To Monitor the Sound While Viewing the Playback Picture in the Viewfinder

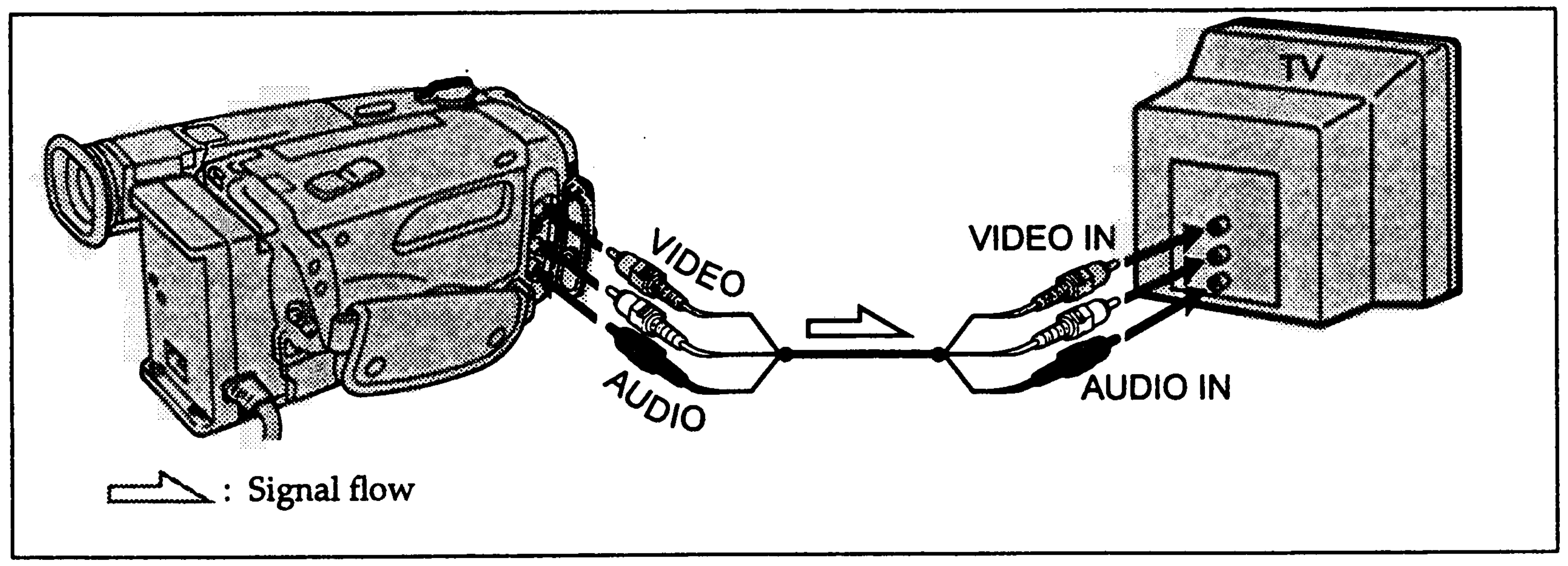
Connect headphones (not supplied) to the ∩ jack. Play back the tape in PLAYER mode (p. 16).

Connections for Playback

You can use this camcorder as a VCR by connecting it directly to your TV for playback. There are some ways to connect the camcorder to your TV. When monitoring the playback picture by connecting the camcorder to your TV, we recommend you to use house current for the power source (p. 18).

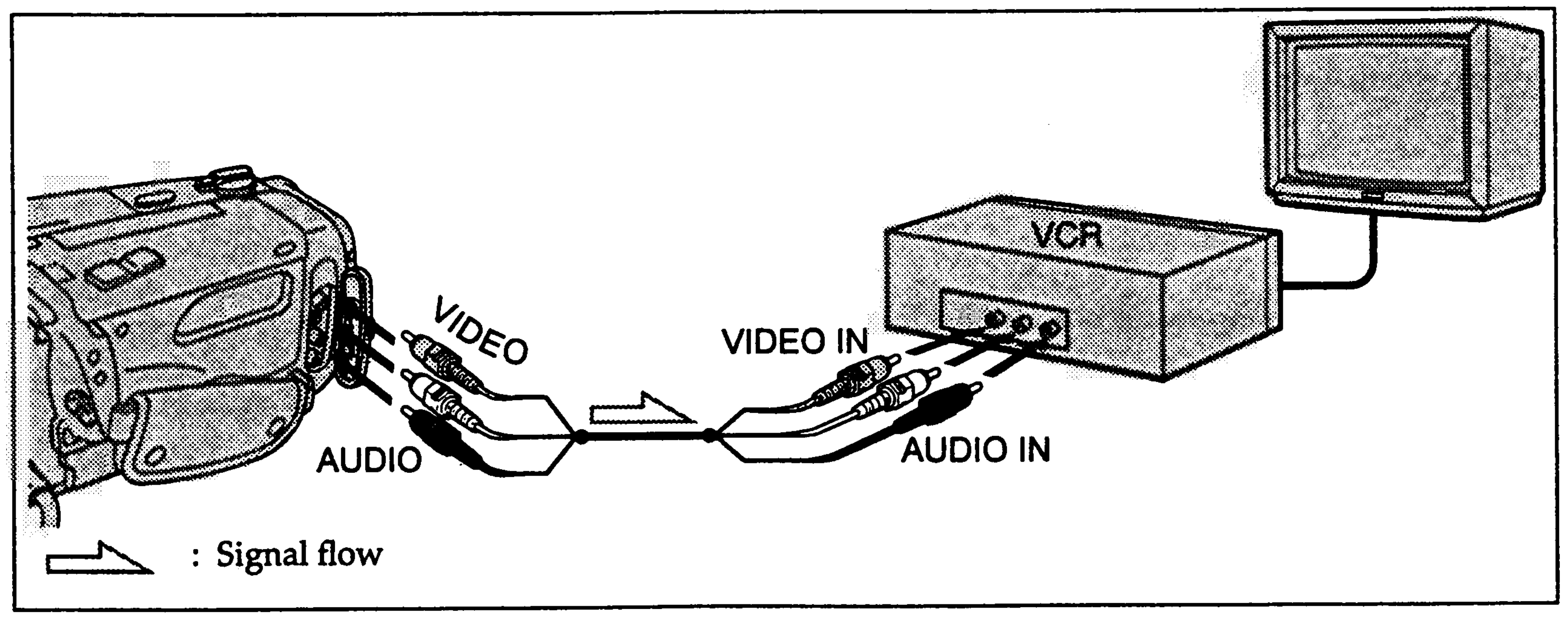
To Connect to a TV with Video/Audio Input Jacks

Connect the camcorder to the inputs on the TV by using the supplied A/V connecting cable. Set the TV/VCR selector on the TV to VCR.



If a VCR is already connected to your TV

Connect the camcorder to the LINE IN inputs on the VCR by using the supplied A/V connecting cable. Set the input selector on the VCR to LINE. Set the TV/VCR selector on the TV to VCR.



If your TV or VCR is a monaural type

Connect only the white plug for audio on both the camcorder and the TV or the VCR. With this connection, the sound is monaural.

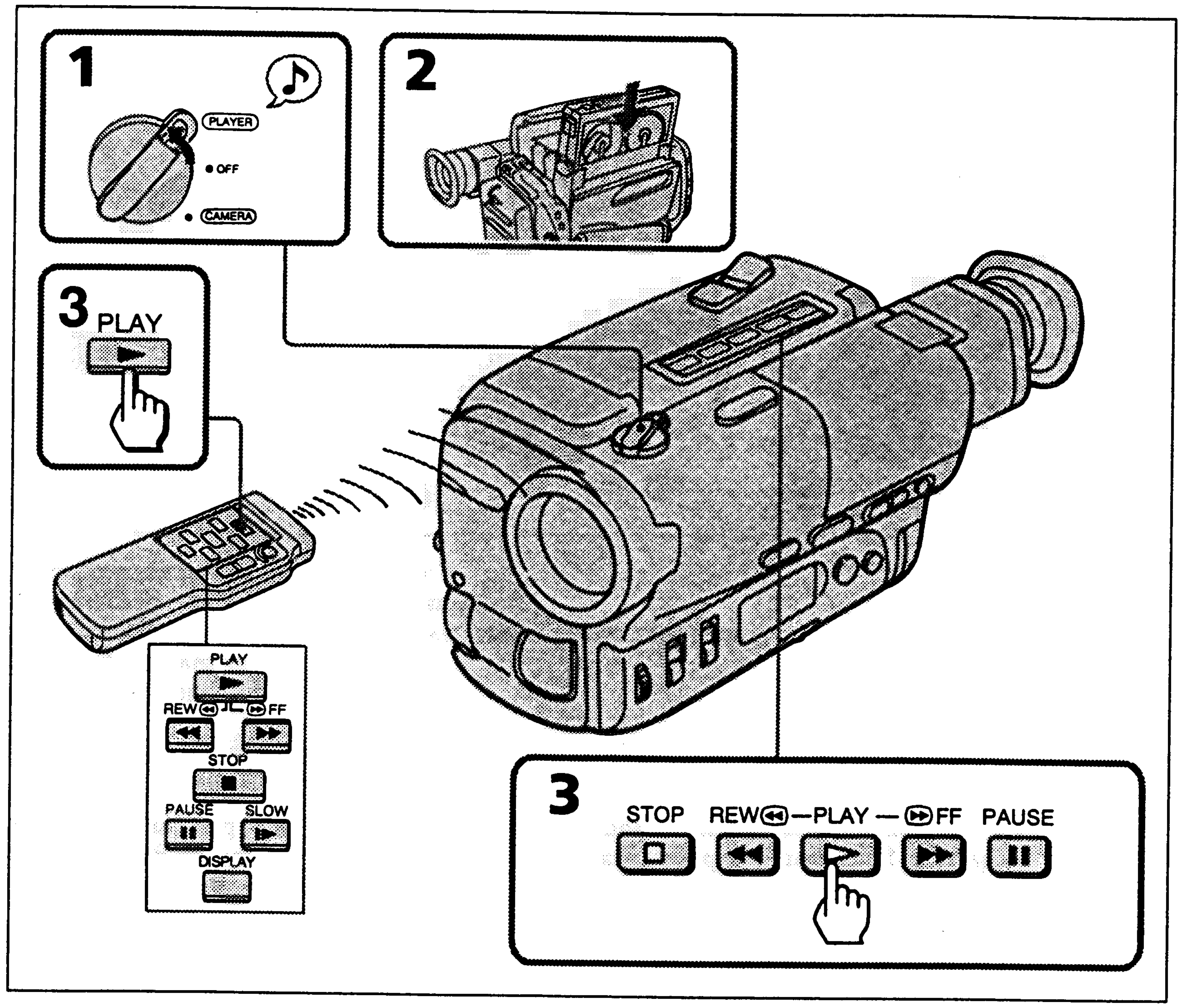
To connect a TV or a VTR without Video/Audio input jacks

Use the RFU-95UC RFU adaptor (not supplied).

Playing Back a Tape

You can monitor the playback picture in the viewfinder. You can also monitor the picture on a TV screen, after connecting the camcorder to a TV or VCR (p. 15). You can use the supplied Remote Commander to control playback.

(1) While pressing the small green button on the POWER switch, turn it to PLAYER. The tape transport buttons light up.
(2) Insert the recorded tape with the window facing out.
(3) Press ▷. Playback starts.



To stop playback, press □.
To rewind the tape, press ◀◀.
To advance the tape rapidly, press ▶▶.

1-7

Various Playback Modes

To view a still picture (Playback pause)
Press ❚❚ during playback. To resume playback, press ❚❚ or ▷.

To locate a scene (Picture search)
Keep pressing ◀◀ or ▶▶ during playback. To resume normal playback, release the button.

To monitor the high-speed picture while advancing the tape or rewinding (Skip scan)
Keep pressing ◀◀ while rewinding or ▶▶ while advancing the tape. To resume normal playback, press ▷.

To view the picture in a sequence of stop-motion images
Press EDITSEARCH in playback pause mode. If you keep pressing EDITSEARCH, you can view the picture play back in the forward (+) or reverse (–) direction.

To view the picture at 1/5 speed (Slow playback) (only with the Remote Commander)
Press ❚▶ on the Remote Commander during playback. To resume normal playback, press ▶. If slow playback lasts for about 1 minute, it shifts to normal speed automatically.

Notes on playback
- Streaks appear and the sound is muted in the various playback modes.
- When playback pause mode lasts for 5 minutes, the camcorder automatically enters stop mode.

To display the viewfinder screen indicators on the TV
Press DISPLAY on the Remote Commander. To erase the indicators, press DISPLAY again.

To select the playback sound
Change the "HiFi SND" mode setting in the menu system (p. 29).

Using Alternative Power Sources

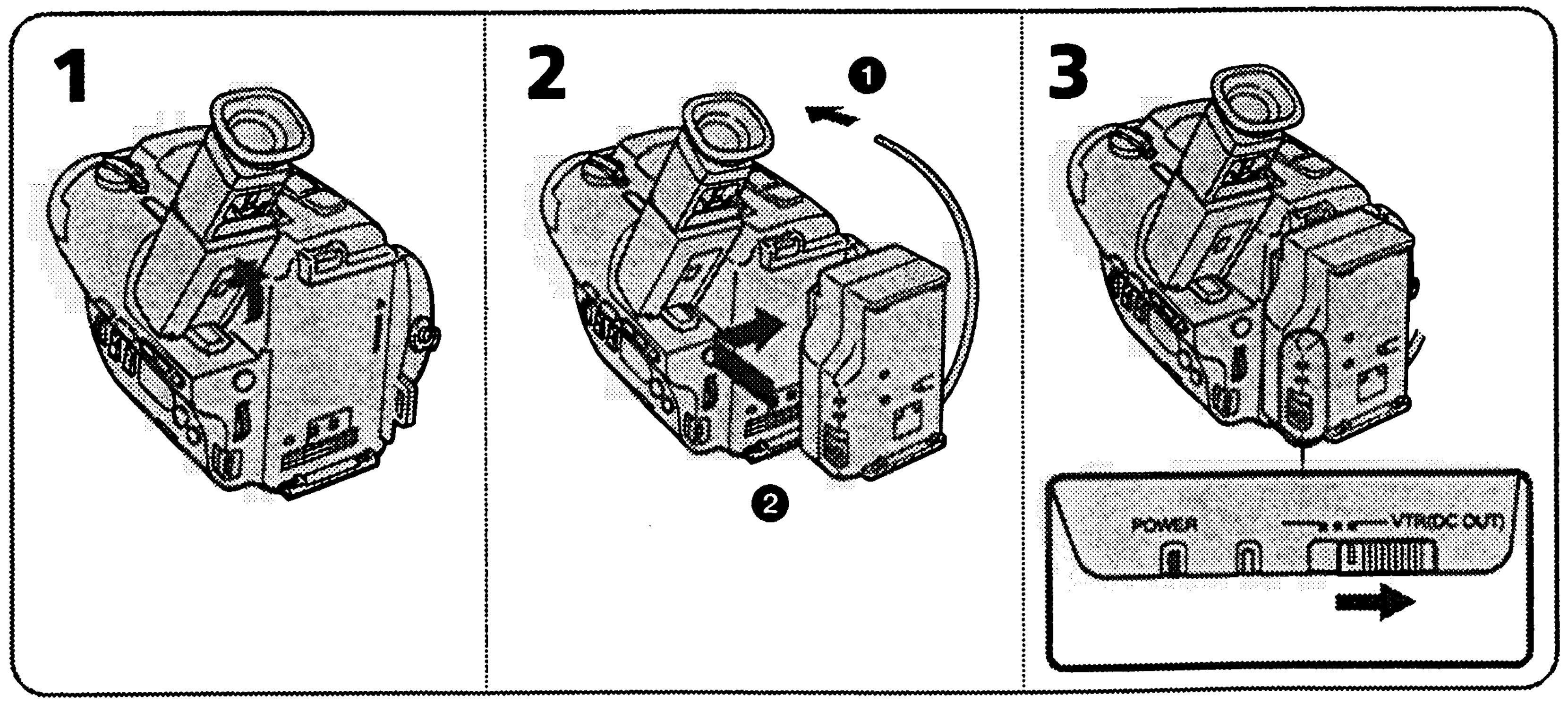
You can choose any of the following power sources for your camcorder: battery pack (p. 6), house current, and 12/24 V car battery. Choose the appropriate power source depending on where you want to use your camcorder.

Place	Power source	Accessory to be used
Indoors	House current	AC power adaptor AC-V25A/V25B/V25C (supplied), AC-S10, AC-V55
Outdoors	Battery pack	Battery pack NP-55 (supplied), NP-80/80D, NP-77H, NP-68, NP-66H, NP-C65, NP-60D
In the car	12 V or 24 V car battery	DC pack DCP-77

Note on power sources
Disconnecting the power source or removing the battery pack during recording or playback may damage the inserted tape. If this happens, restore the power supply again immediately.

Using House Current

To use the supplied AC power adaptor:
(1) Lift up the viewfinder.
(2) Connect the AC power cord to a wall outlet. Connect the bottom of the AC power adaptor to the battery mounting surface of the camcorder.
(3) Set the selector to VTR (DC OUT).



WARNING

The power cord must only be changed at qualified service shop.

PRECAUTION

The set is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet, even if the set itself has been turned off.

Notes on the POWER lamp
- The POWER lamp will remain lit for a while even if the unit is unplugged after use. This is normal.
- If the POWER lamp does not light, set the selector to the center position and disconnect the power cord. After about one minute, reconnect the power cord and set the selector to VTR (DC OUT) again.

To remove the adaptor
The adaptor is removed in the same way as the battery pack (p. 8).

Using a Car Battery

Use the DCP-77 DC pack (not supplied). Connect the cord of the DC pack to the cigarette lighter socket of the car (12 V or 24 V). Connect the DC pack to the battery mounting surface of the camcorder.

To remove the DC pack
The DC pack is removed in the same way as the battery pack (p. 8).

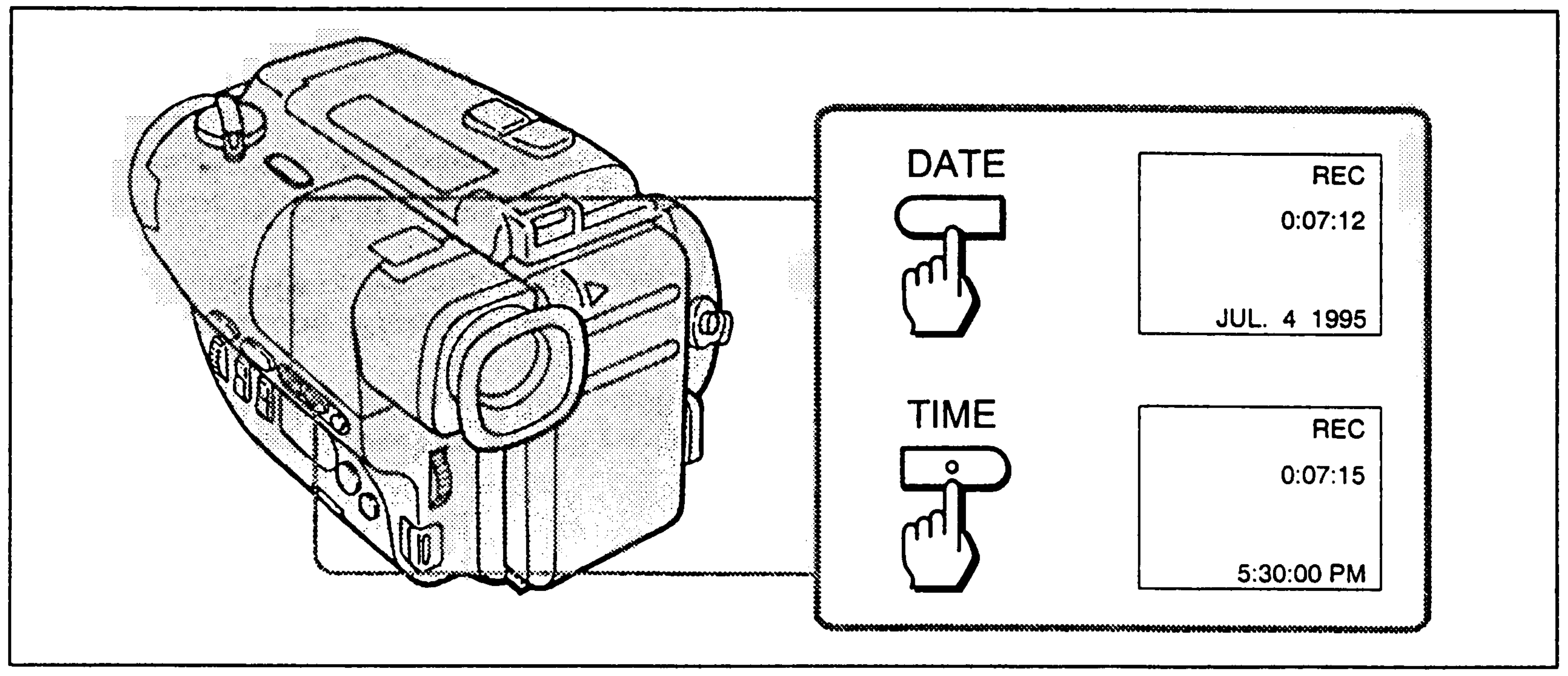
Options for Charging the Battery Pack

- AC-S10 AC power adaptor:
  You can charge a battery pack whether it is used up or not with this adaptor because it has a discharging function.
- BC-S10 portable battery charger (ideal for travel):
  You can charge a battery pack on 100 – 240 V AC current.

This mark indicates that this product is a genuine product related to our 8 mm video equipment.
We recommend that you purchase related 8 mm video products provided with the same mark or products provided with our logotype mark.

Recording with the Date or Time

Before you start recording, press DATE or TIME. You can record the date or time displayed in the viewfinder with the picture. You cannot record the date and time at the same time. Except for the date or time indicator, no indicator in the viewfinder is recorded.
The clock is set to the East Coast Standard Time at the factory, but you can reset the clock in the menu system (p. 32).

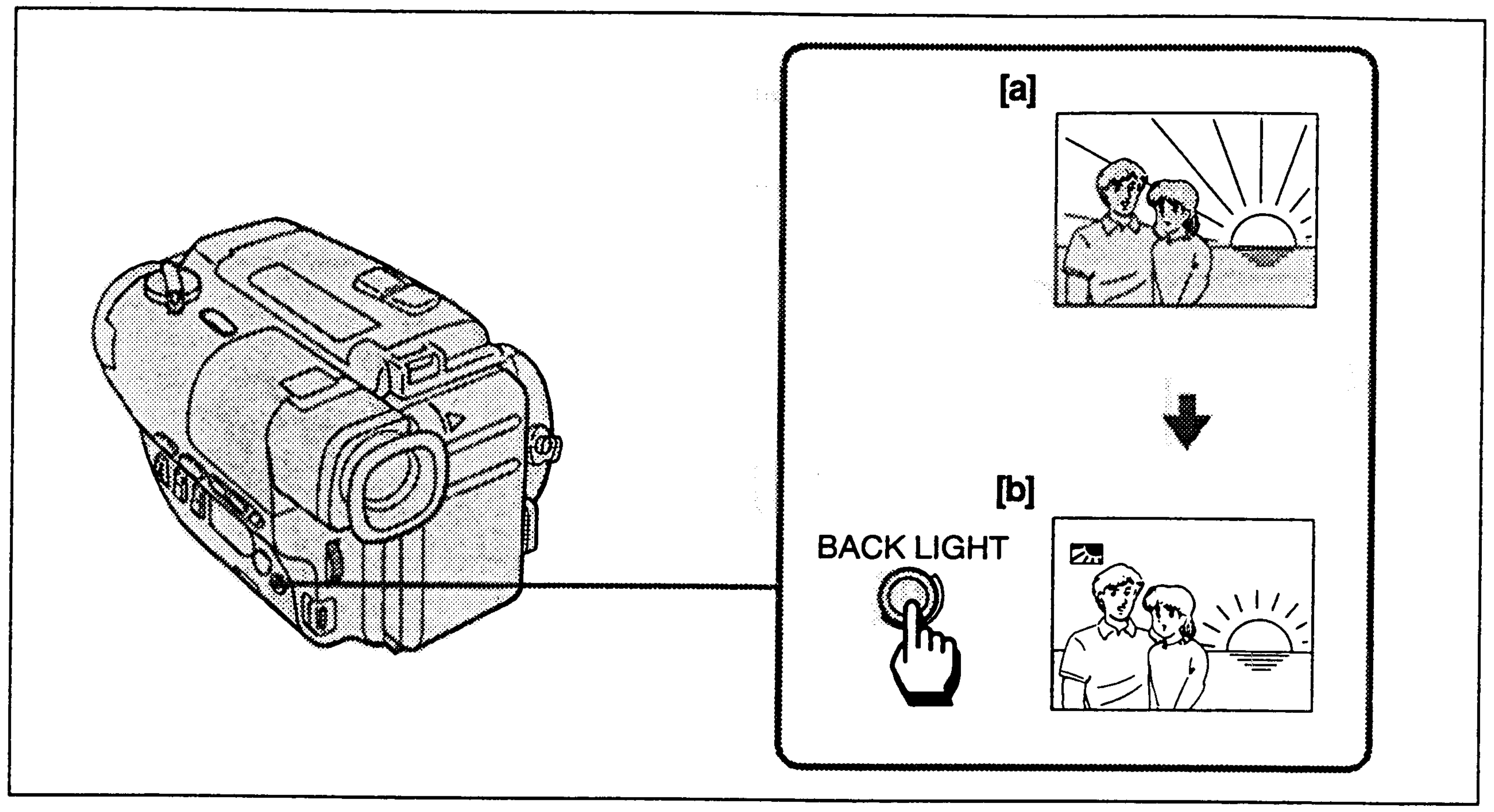


To Stop Recording with the Date or Time
Press DATE or TIME again. The date or time indicator disappears. The recording continues.

Shooting with Backlighting

When you shoot a subject with the light source behind the subject or a subject with a light background, use the BACK LIGHT function.

Press BACK LIGHT. The ▨ indicator appears in the viewfinder.



[a] Subject is too dark because of backlight.
[b] Subject becomes bright with backlight compensation.

After Shooting

Be sure to release this adjustment condition by pressing BACK LIGHT again. The ▨ indicator in the viewfinder disappears. Otherwise, the picture will be too bright under normal lighting condition.

This function is also effective under the following conditions:

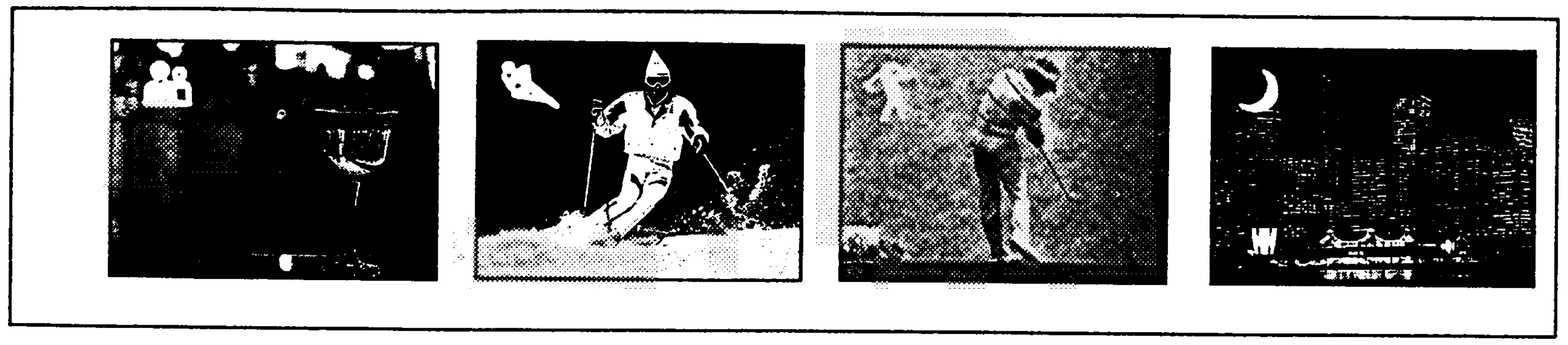
- On snow, e.g. at a ski resort
- At the beach under strong sunshine
- A subject with a light source nearby or a mirror reflecting light
- A white subject against a white background. Especially when you shoot a person wearing shiny clothes made of silk or synthetic fiber, his or her face tends to become dark if you do not use this function.

Using the PROGRAM AE Function

You can select from four PROGRAM AE (Auto Exposure) modes to suit your shooting situation. When you use PROGRAM AE, you can get a Portrait effect (the subject is in focus and the background is out of focus), capture high-speed action, or record night views.

Selecting the Best Mode

Select one of four modes, referring to the following.



Portrait mode

- A still subject such as a person or a flower
- Zooming in on a subject in the telephoto mode
- A subject behind an obstacle such as a net

Sports mode

- Outdoor sports scenes such as football, tennis, golf or skiing
- A landscape from a moving car

High-speed shutter mode

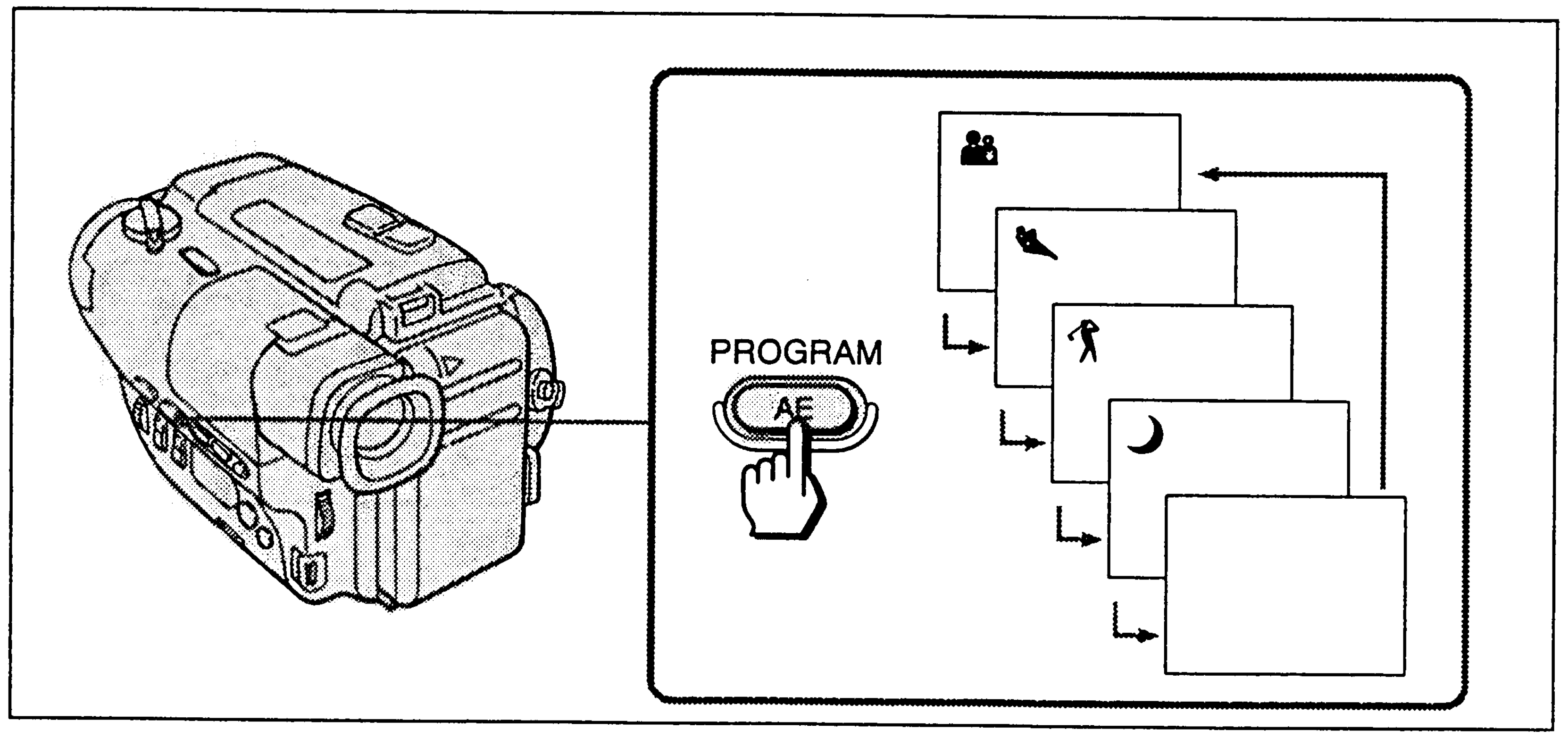
- A golf swing or a tennis match in fine weather with the ball captured clearly
- Playing back certain scenes with high-speed movements in a clear, sharp picture

Twilight mode

- Recording night views, neon signs or fireworks

Using the PROGRAM AE Function

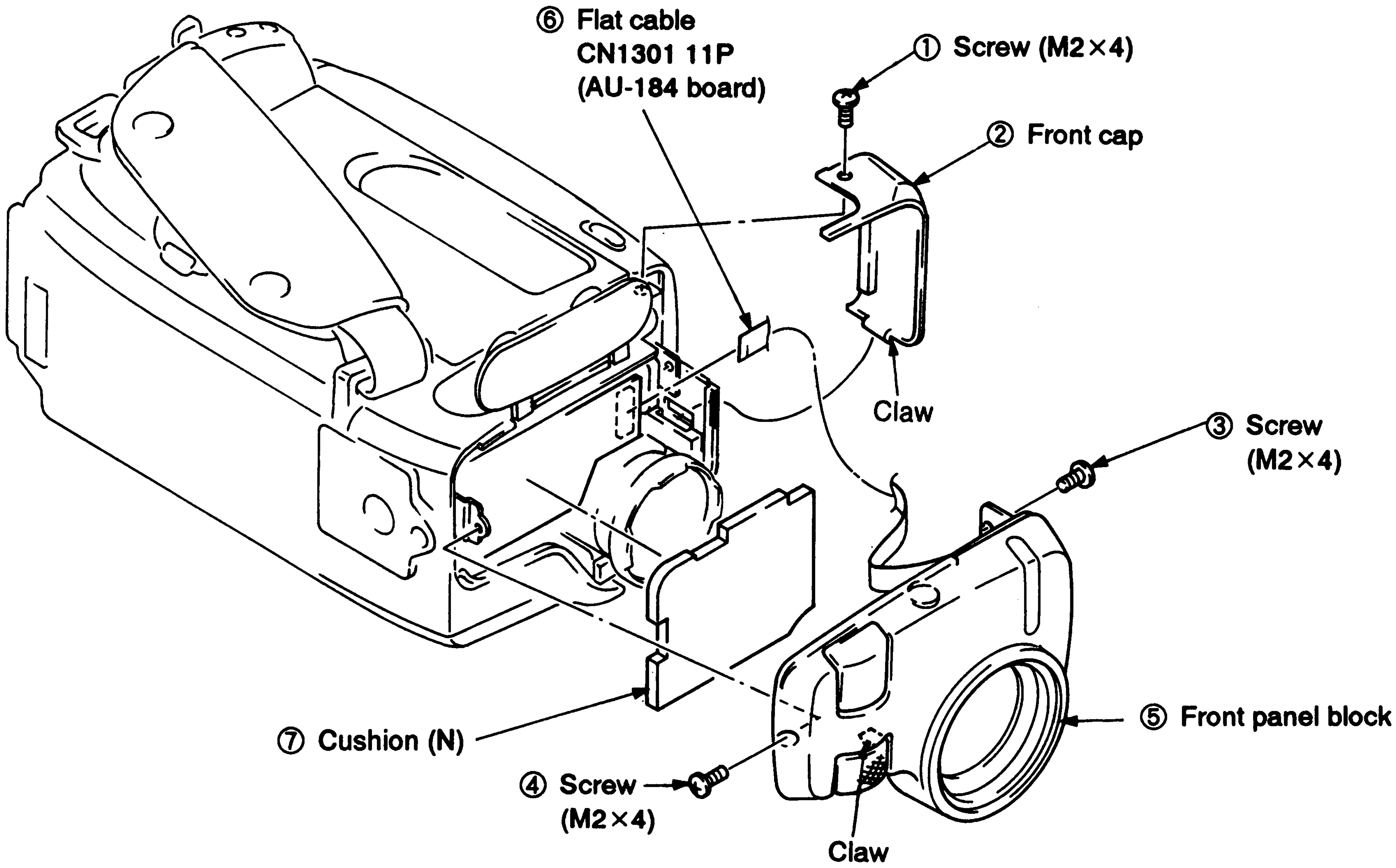
Press PROGRAM AE. The indicator of the selected PROGRAM AE mode appears in the viewfinder.



Note on shutter speed
The shutter speed in each PROGRAM AE mode is as follows:
Portrait mode — between 1/60 to 1/2000
Sports mode — between 1/60 to 1/500
High-speed shutter mode — 1/4000
Twilight mode — 1/60
Normal mode — 1/60

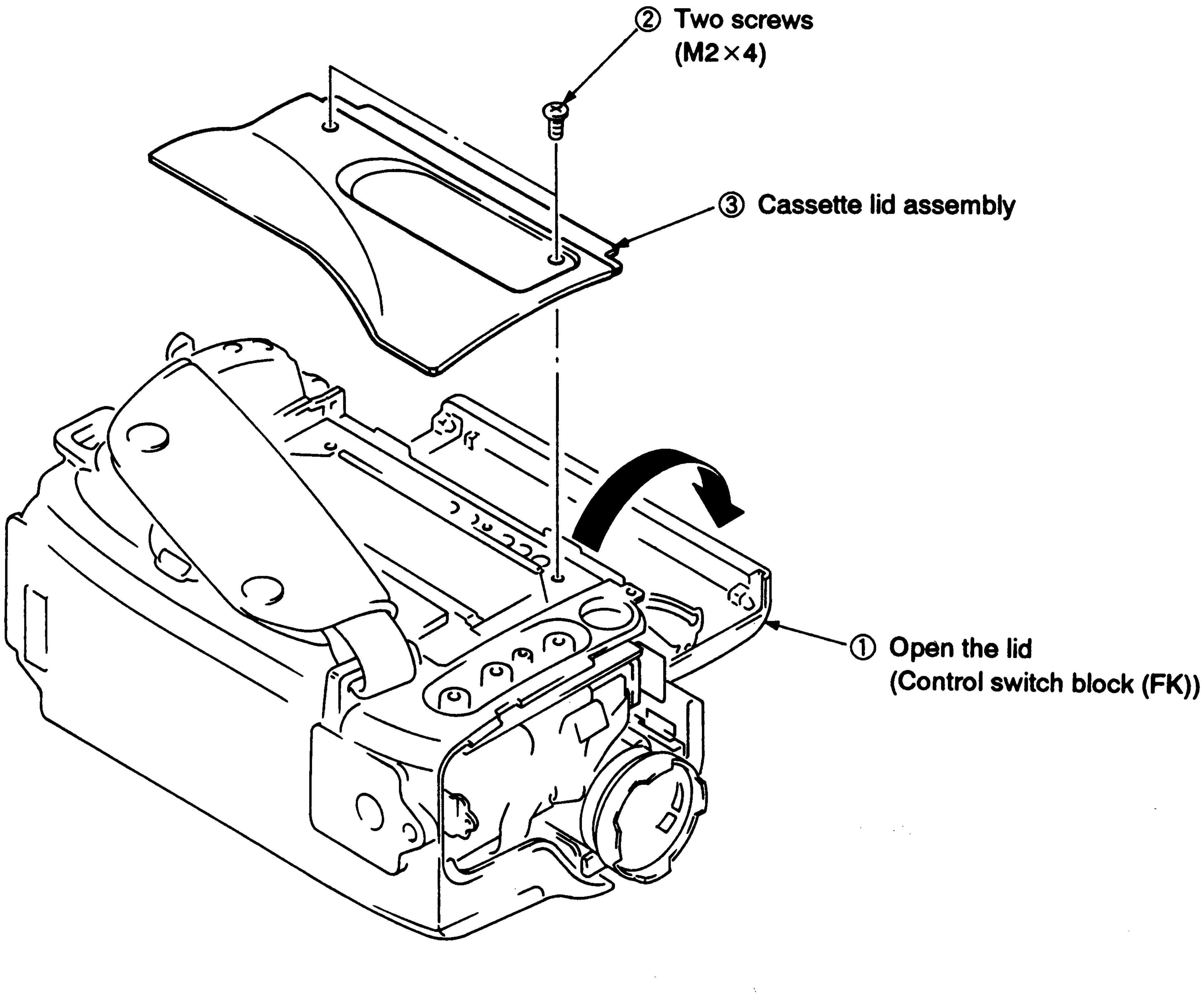
SECTION 2
DISASSEMBLY

2-1. REMOVAL OF FRONT PANEL BLOCK



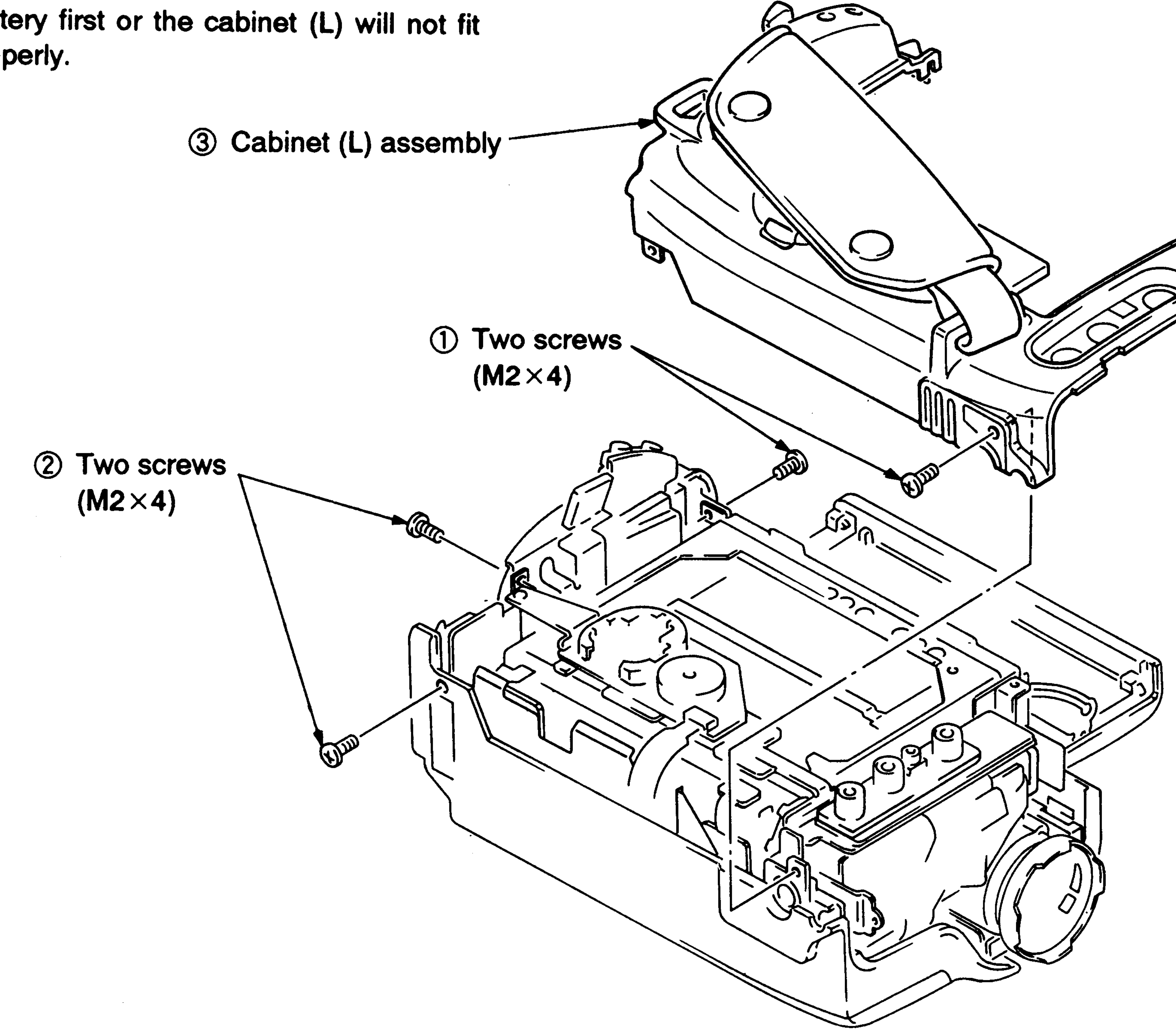
Note :Take care to handle here because it breaks easily

2-2. REMOVAL OF CASSETTE LID ASSEMBLY

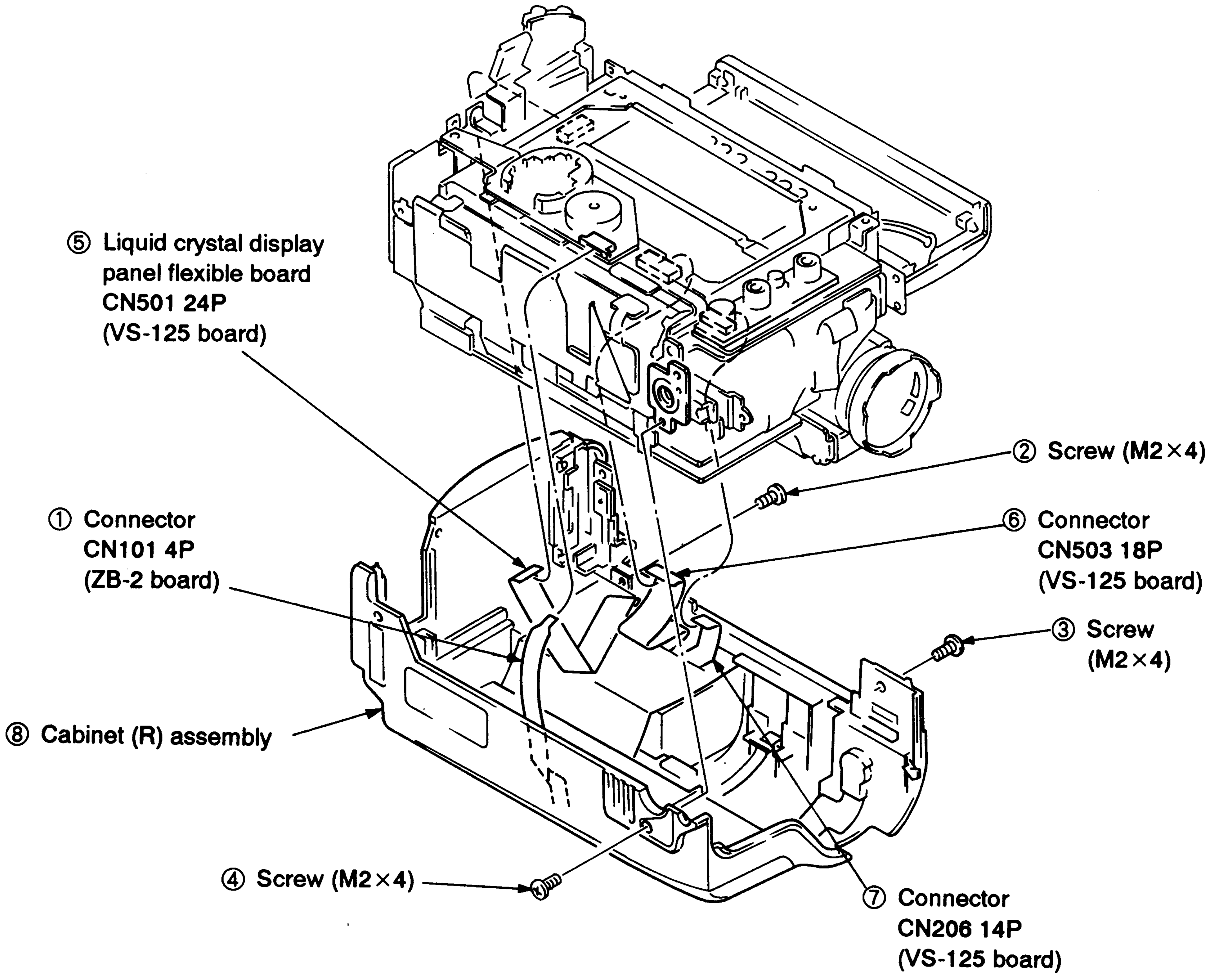


2-3. REMOVAL OF CABINET (L) ASSEMBLY

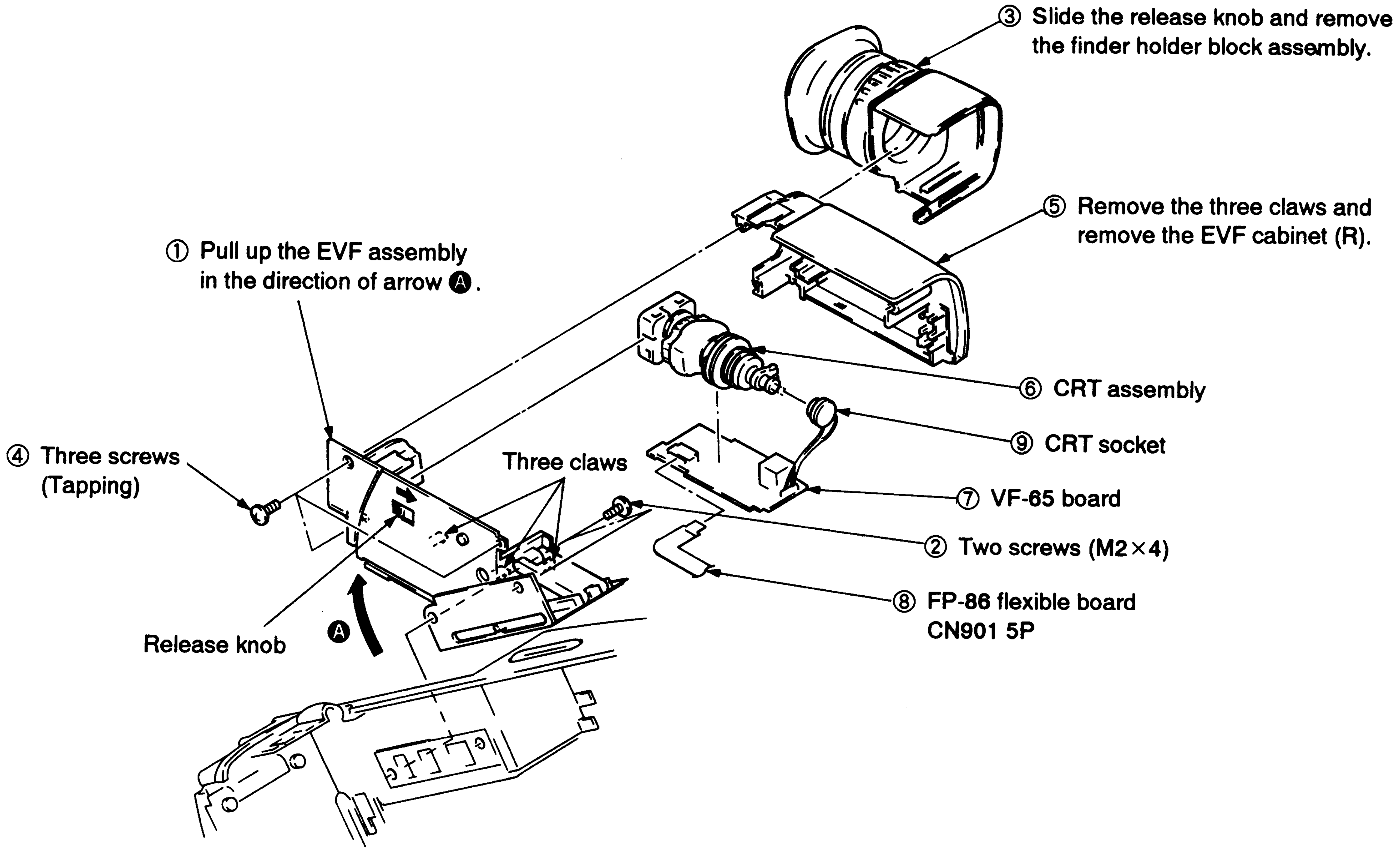
Note: When incorporating the cabinet (L) block assembly, be sure to remove the lithium battery first or the cabinet (L) will not fit properly.



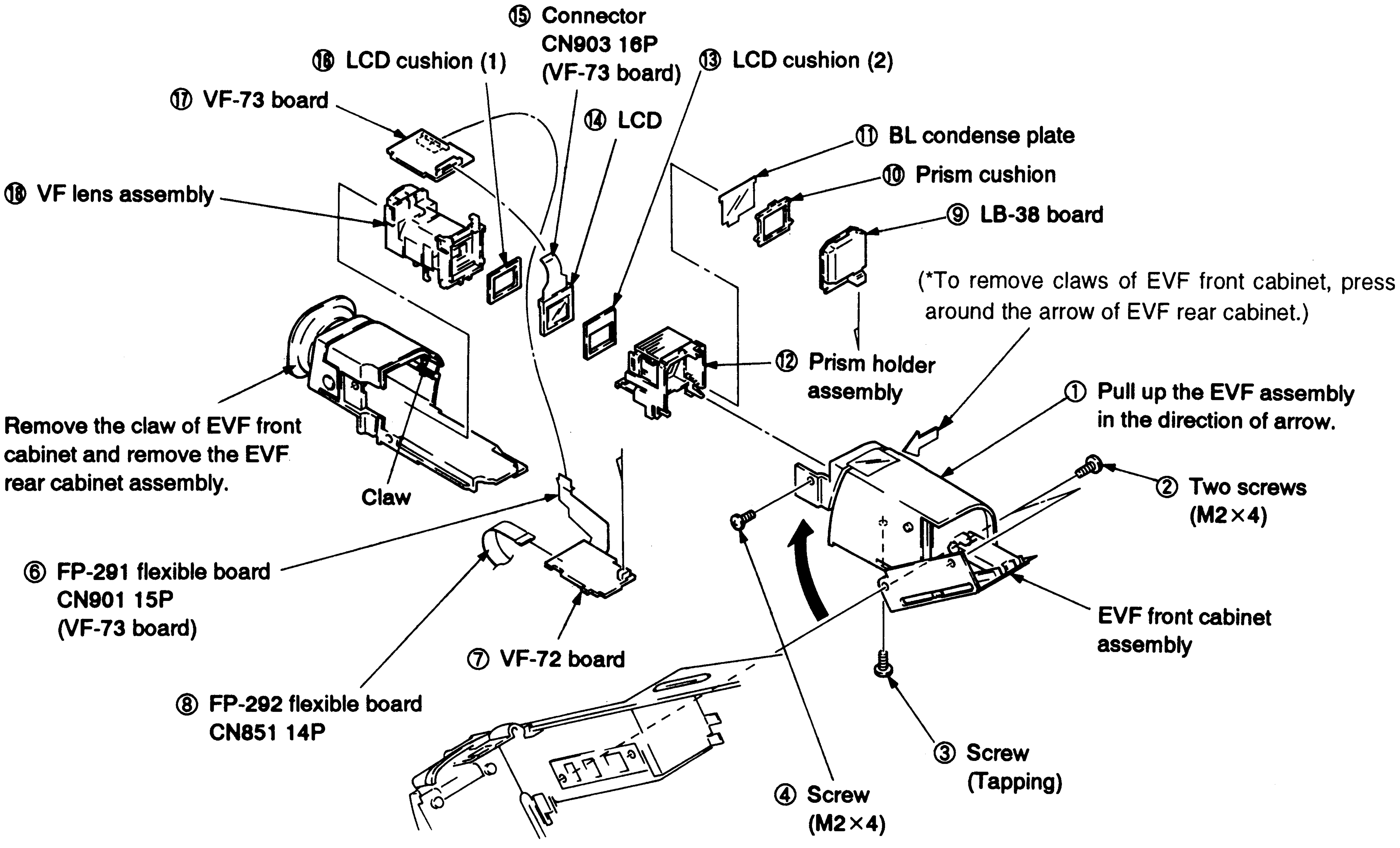
2-4. REMOVAL OF CABINET (R) ASSEMBLY


⑤ Liquid crystal display panel flexible board CN501 24P (VS-125 board)
② Screw (M2×4)
① Connector CN101 4P (ZB-2 board)
⑥ Connector CN503 18P (VS-125 board)
③ Screw (M2×4)
⑧ Cabinet (R) assembly
④ Screw (M2×4)
⑦ Connector CN206 14P (VS-125 board)

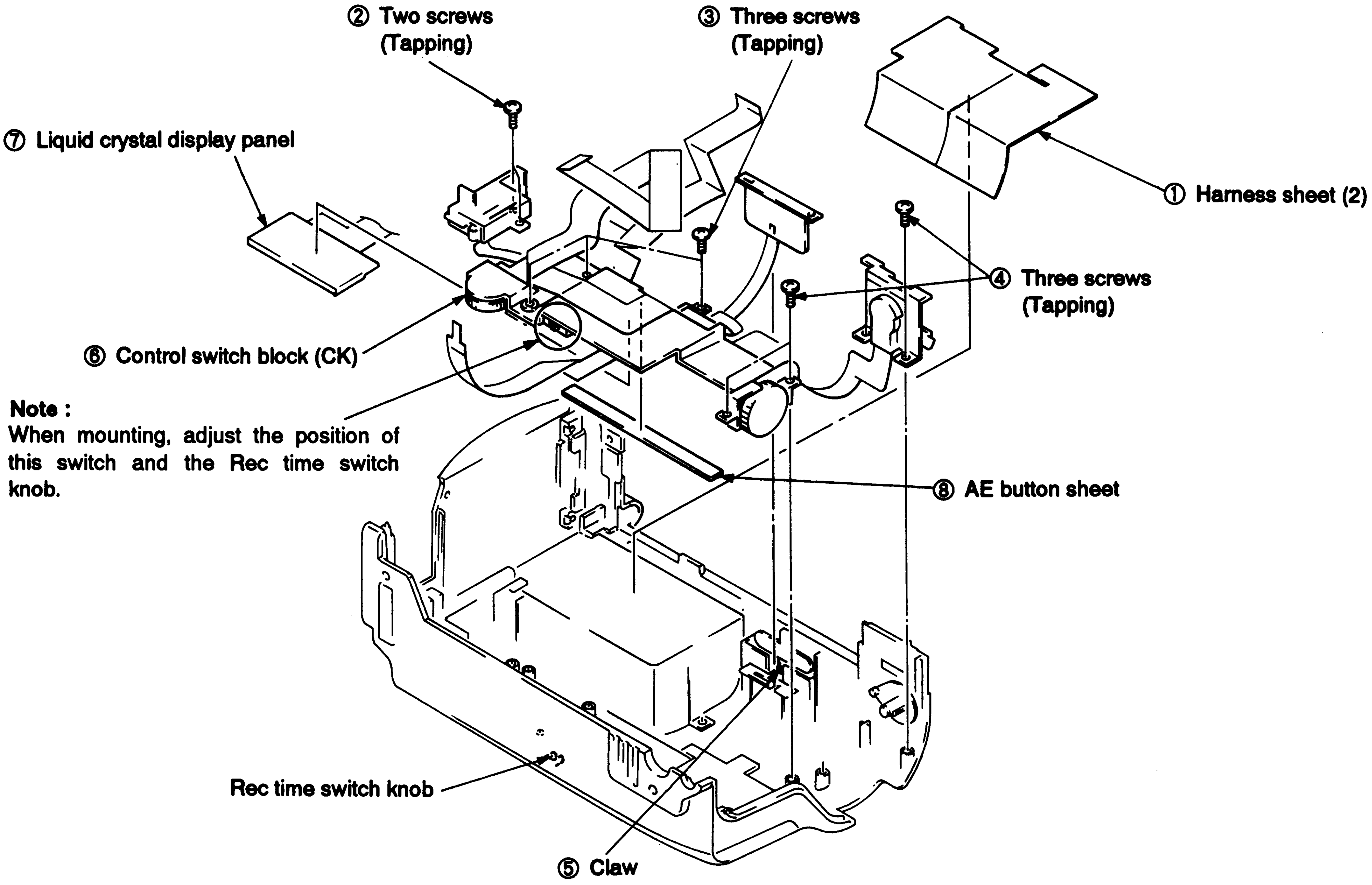
2-5. REMOVAL OF W/B EVF ASSEMBLY (TR36/TR83/TR100)


③ Slide the release knob and remove the finder holder block assembly.
⑤ Remove the three claws and remove the EVF cabinet (R).
① Pull up the EVF assembly in the direction of arrow Ⓐ.
⑥ CRT assembly
⑨ CRT socket
④ Three screws (Tapping)
Three claws
⑦ VF-65 board
② Two screws (M2×4)
⑧ FP-86 flexible board CN901 5P
Release knob
Ⓐ

2-5. REMOVAL OF COLOR EVF ASSEMBLY (TR73/TR76/TR93/TR560/TR600/TR670/TR880)

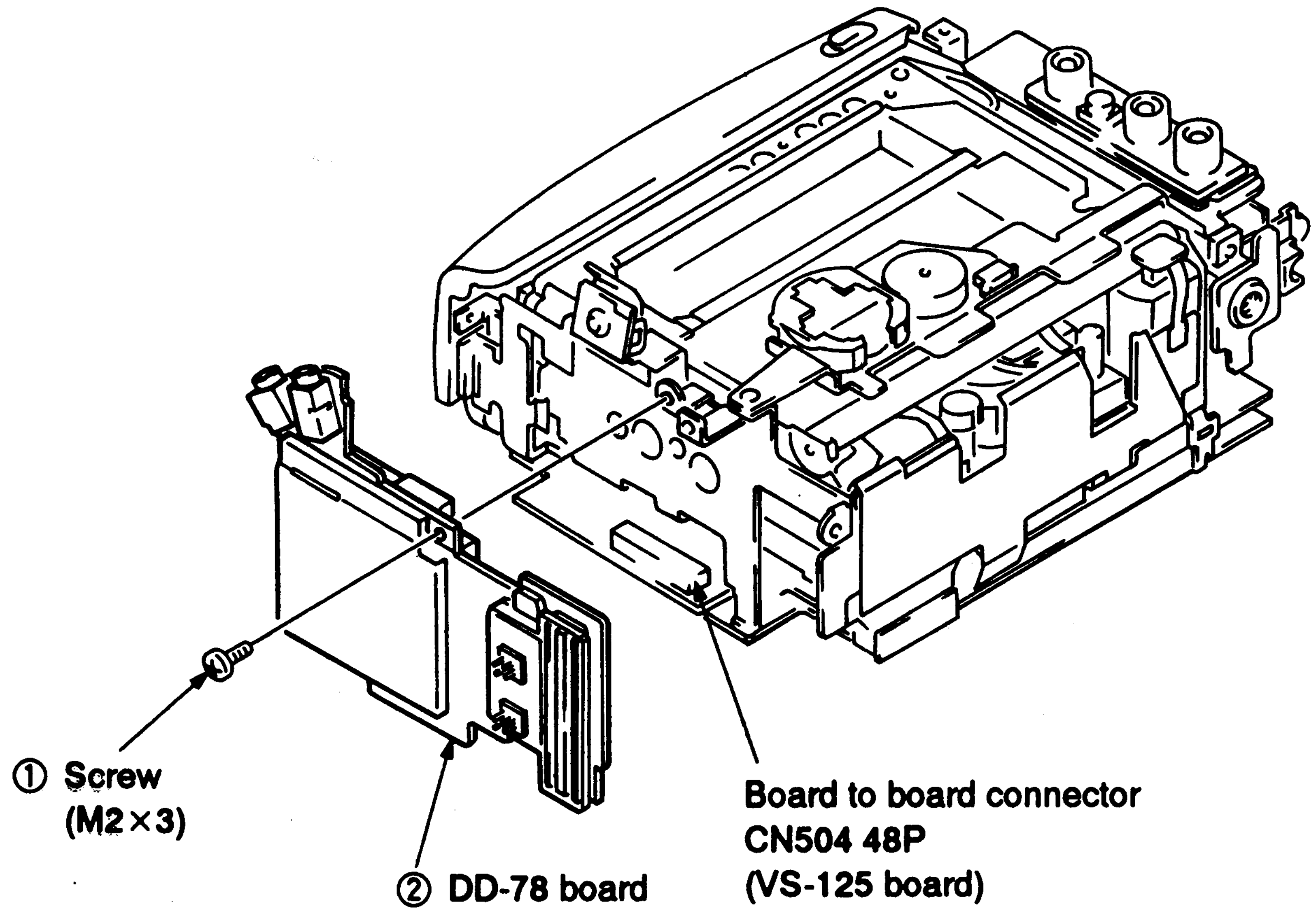

⑮ Connector CN903 16P (VF-73 board)
⑯ LCD cushion (1)
⑬ LCD cushion (2)
⑰ VF-73 board
⑭ LCD
⑪ BL condense plate
⑩ Prism cushion
⑱ VF lens assembly
⑨ LB-38 board
(*To remove claws of EVF front cabinet, press around the arrow of EVF rear cabinet.)
⑫ Prism holder assembly
① Pull up the EVF assembly in the direction of arrow.
⑤ Remove the claw of EVF front cabinet and remove the EVF rear cabinet assembly.
② Two screws (M2×4)
Claw
⑥ FP-291 flexible board CN901 15P (VF-73 board)
EVF front cabinet assembly
⑦ VF-72 board
⑧ FP-292 flexible board CN851 14P
③ Screw (Tapping)
④ Screw (M2×4)

2-6. REMOVAL OF CONTROL SWITCH BLOCK (CK)

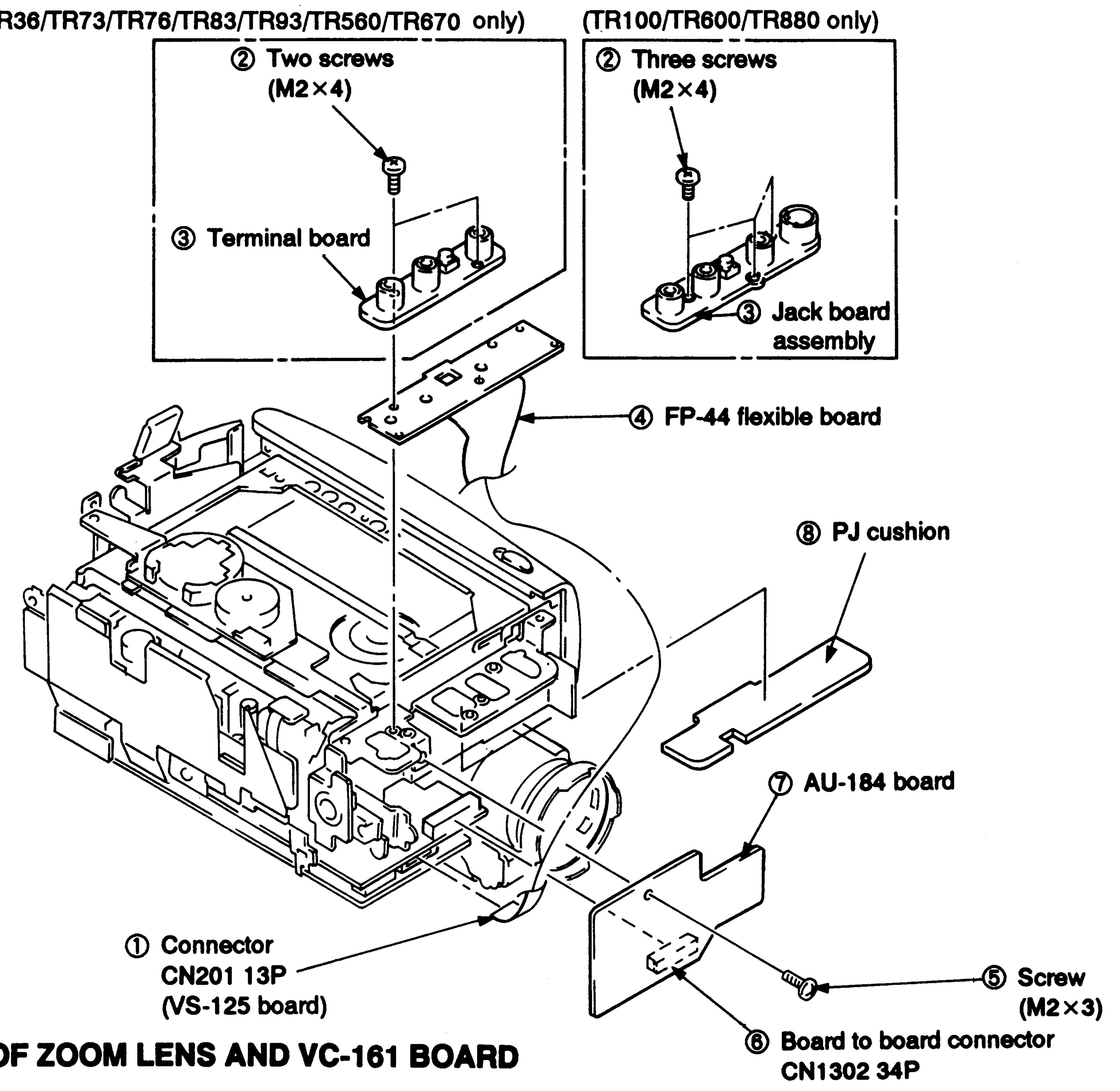


Note :
When mounting, adjust the position of this switch and the Rec time switch knob.

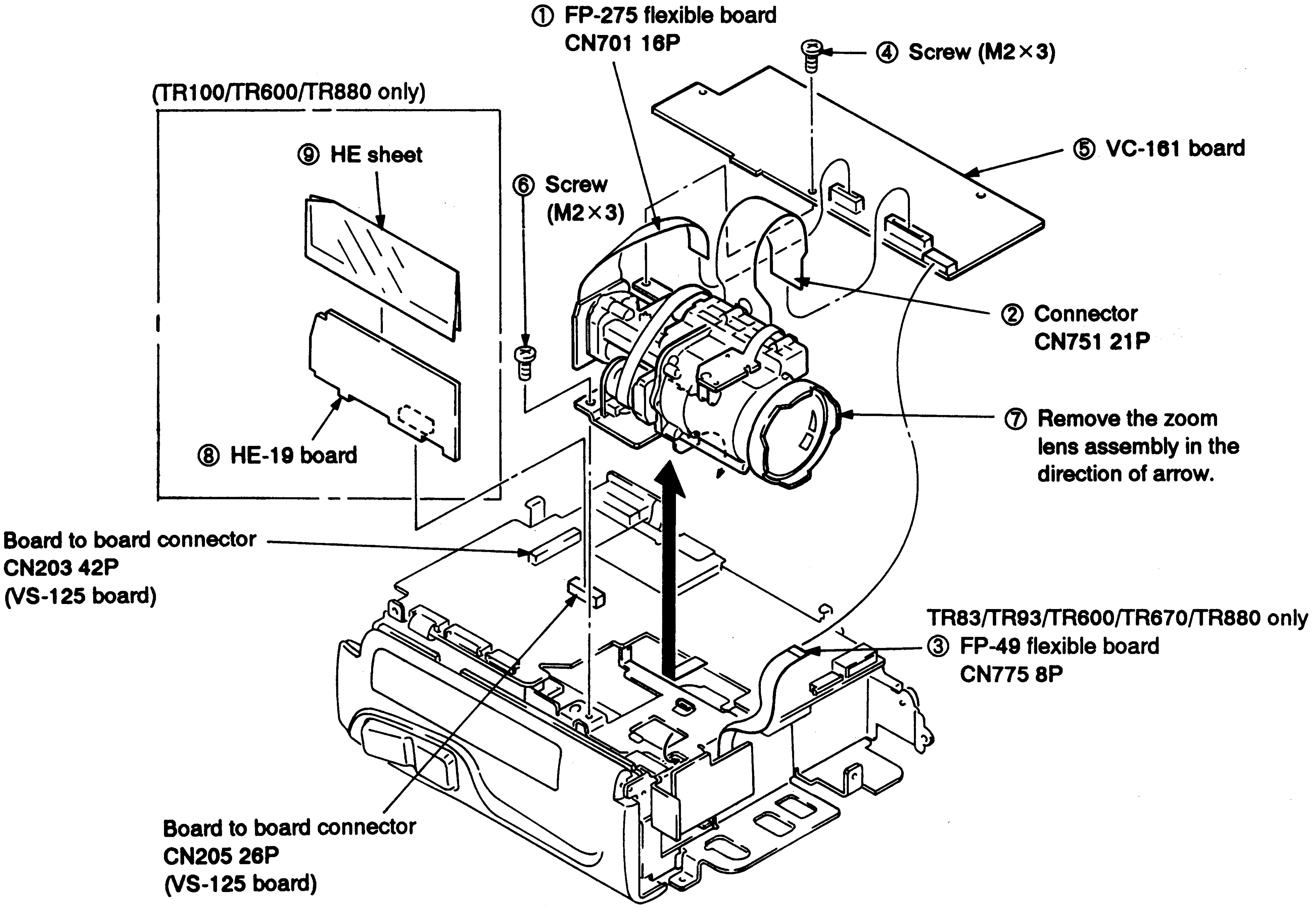
2-7. REMOVAL OF DD-78 BOARD



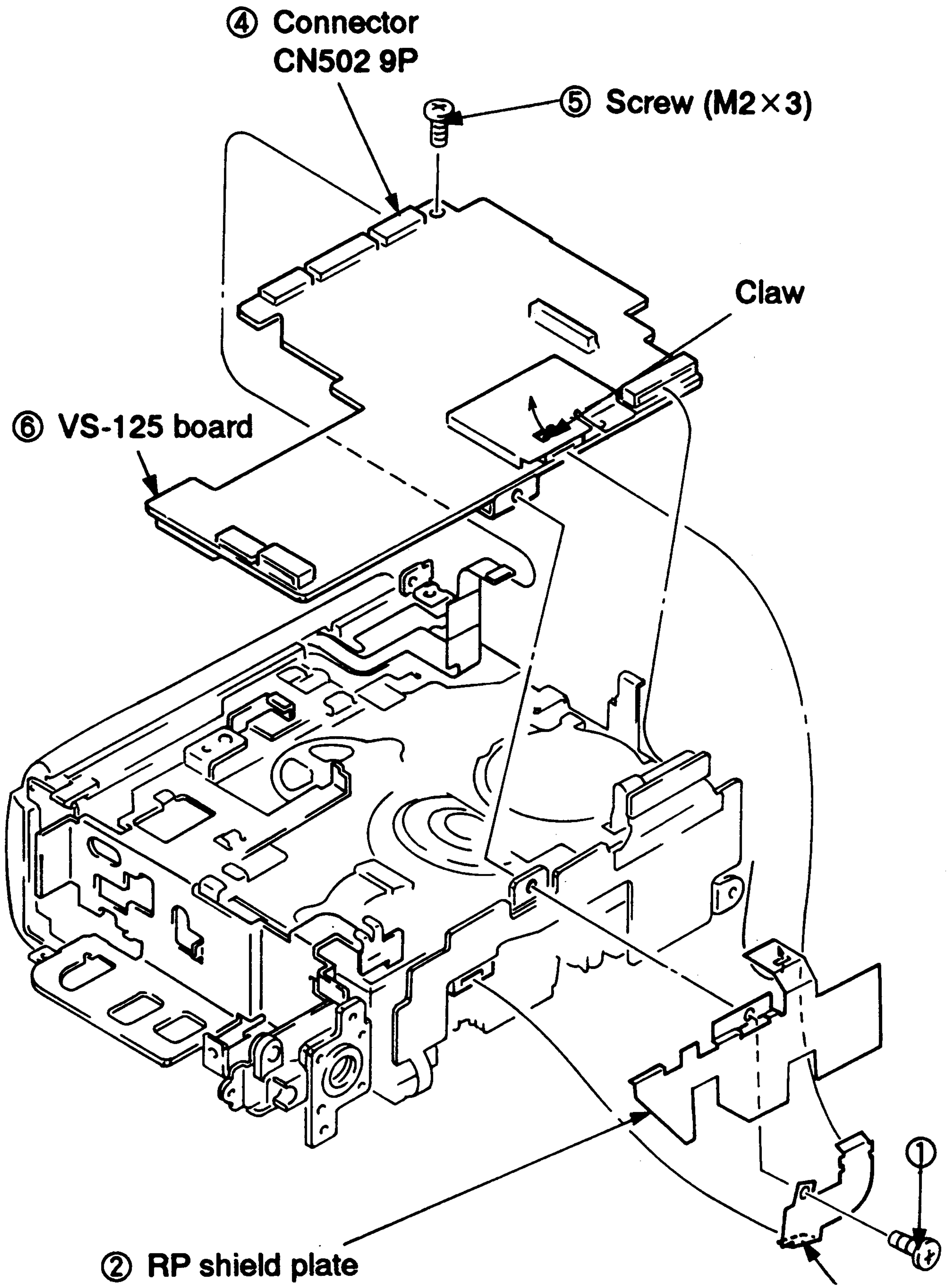
2-8. REMOVAL OF TERMINAL BOARD AND AU-184 BOARD



2-9. REMOVAL OF ZOOM LENS AND VC-161 BOARD

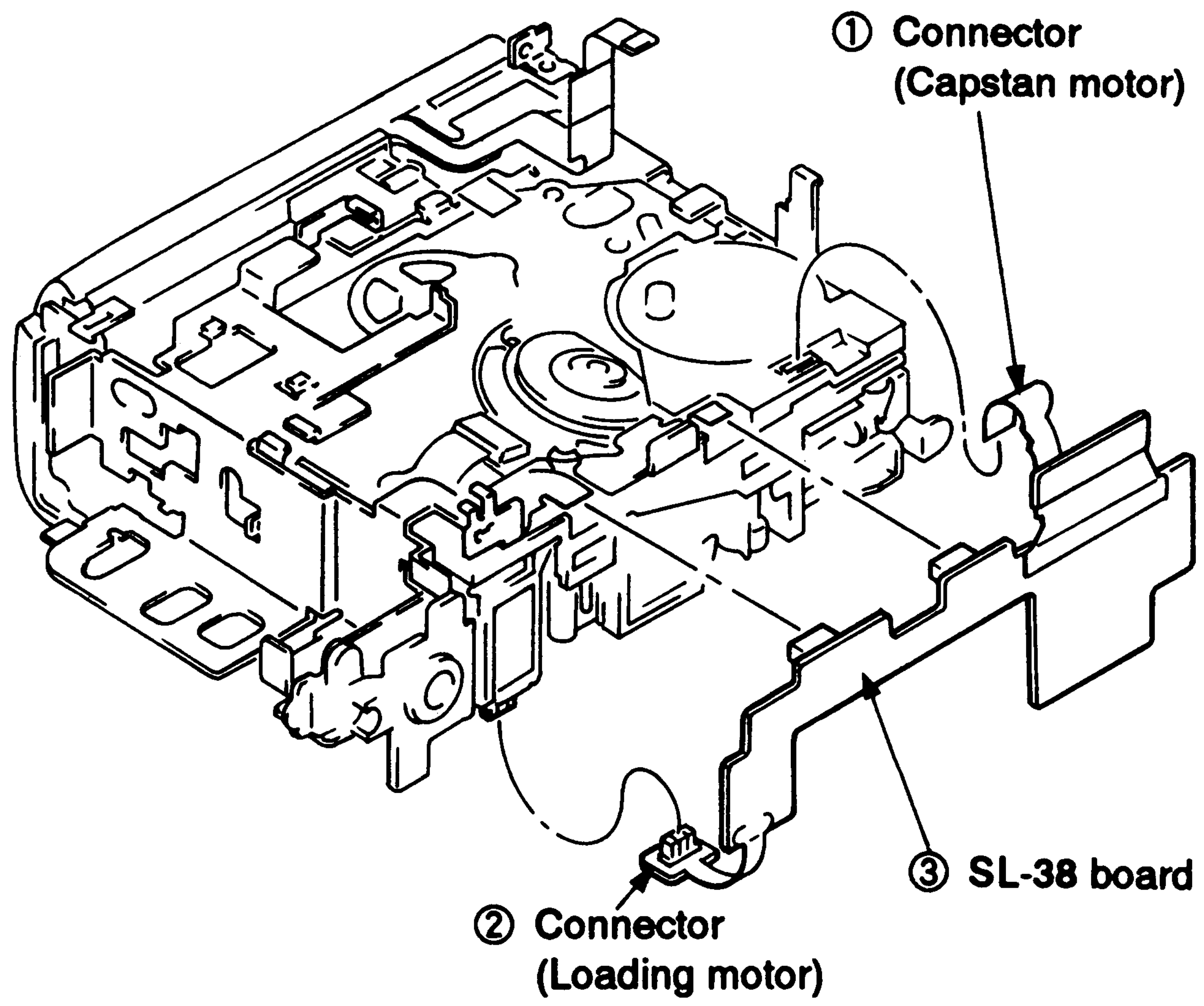


2-10. REMOVAL OF VS-125 BOARD

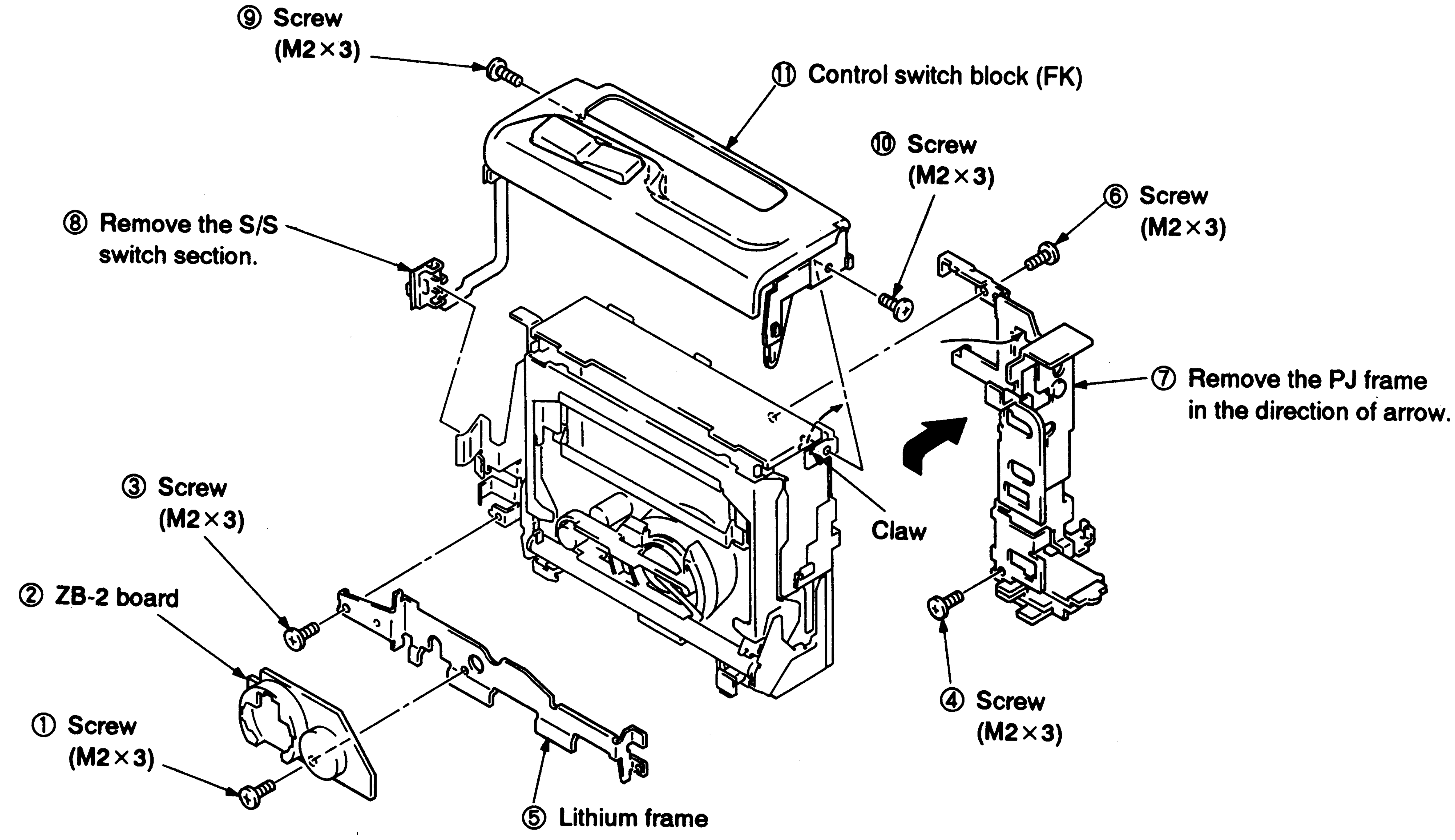


Note: Be sure to check the claw of the shield case catches a hole for installation.

2-11. REMOVAL OF SL-38 BOARD

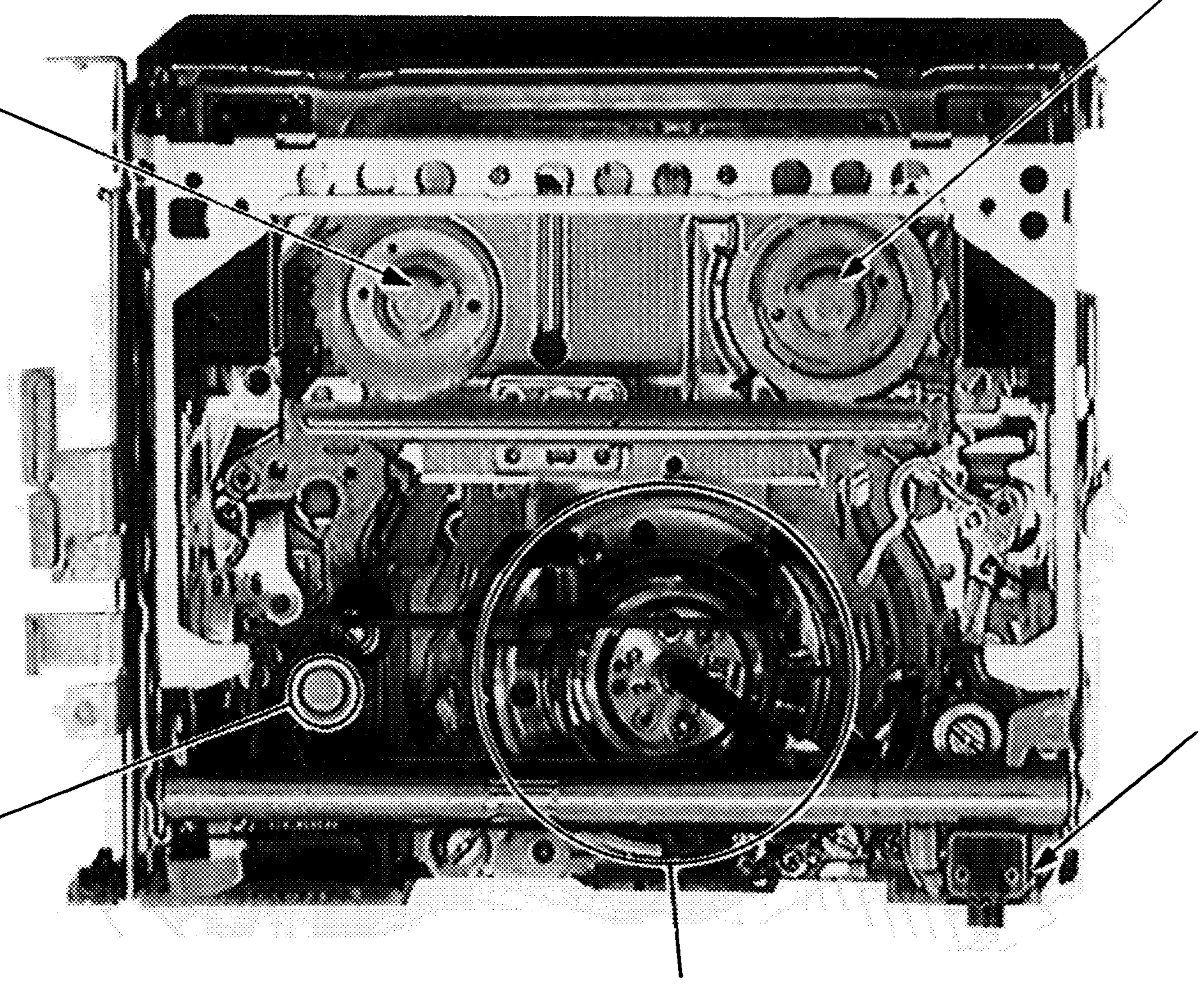


2-12. REMOVAL OF CONTROL SWITCH BLOCK (FK) AND ZB-2 BOARD



2-13. INTERNAL VIEWS

— Left side —



T reel table assembly
X-3941-274-1

S reel table assembly
X-3944-116-1

M903
Loading motor assembly
A-7040-304-A

M902
Capstan motor

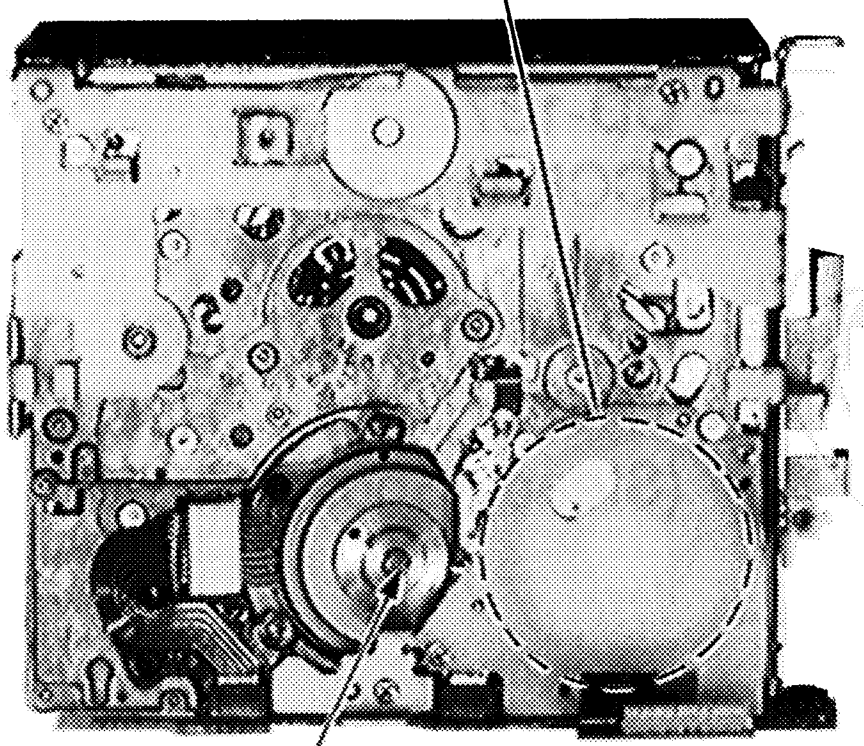
M901 (TR36/TR73/TR76/TR83/TR93/TR560/TR670)

Drum assembly	DGH-78A-R	A-7048-564-A
Upper drum assembly	DGR-78-R	A-7049-501-A

M901 (TR100/TR600/TR880)

Drum assembly	DGH-0B5A-R	A-7048-776-A
Upper drum assembly	DGR-0B5-R	A-7049-651-A

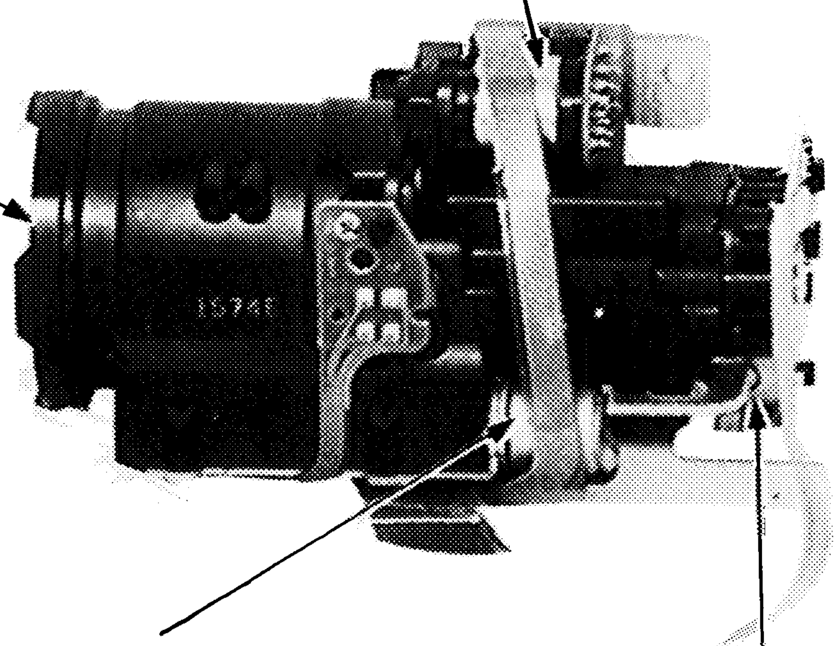
— Right side —



M902
Capstan motor (SCE-0101A)
8-835-477-12

M901
Drum assembly

— Zoom lens —



M907 (TYPE Ⅱ)
IG meter
3-708-888-01
M910 (TYPE Ⅲ)
IRIS assembly
3-708-898-01

Device lens (LSV-140A) (TYPE Ⅰ)
8-848-704-01
Zoom lens (VCL-5412WA) (TYPE Ⅱ)
1-547-716-11
Zoom lens (VCL-5412WB) (TYPE Ⅲ)
1-547-739-11

M906 (TYPE Ⅰ)
Zoom motor assembly
1-698-363-01
M909 (TYPE Ⅱ)
Zoom motor assembly
3-708-887-01
M912 (TYPE Ⅲ)
Zoom motor assembly
3-708-896-01

M905 (TYPE Ⅰ)
Focus motor assembly
1-698-364-01
M908 (TYPE Ⅱ)
Focus motor assembly
3-708-889-01
M911 (TYPE Ⅲ)
Focus motor assembly
3-708-897-01

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Quality Engineering Dept.

Sony Corporation
Consumer A&V Products Company
Personal A&V Products Div.

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SECTION 5
REPAIR PARTS LIST

5-1. EXPLODED VIEWS

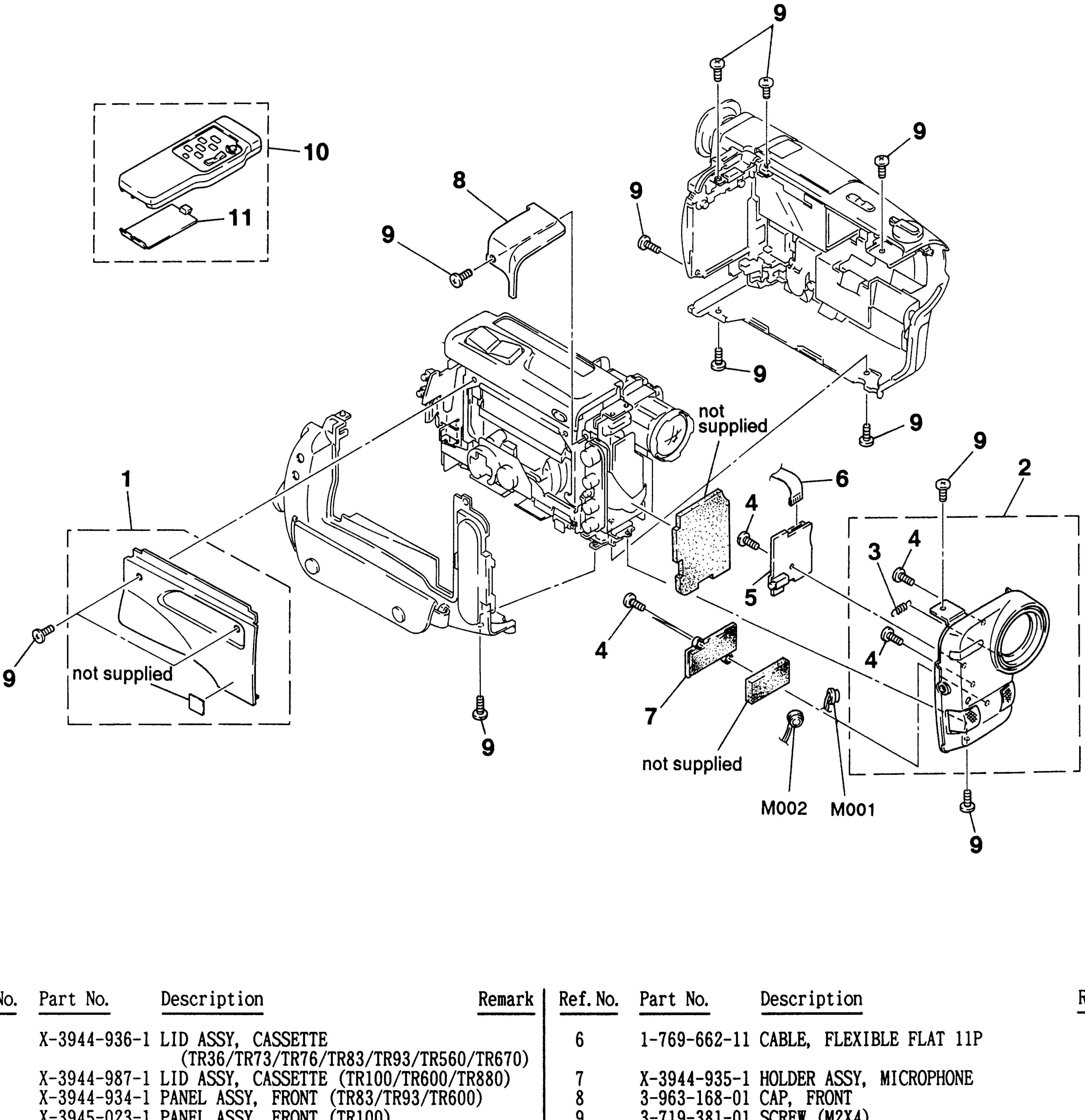
NOTE:

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " ∗ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.
- Canadian model is abbreviated as CND.
  Hong Kong model is abbreviated as HK.
  Tourist model is abbreviated as JE.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

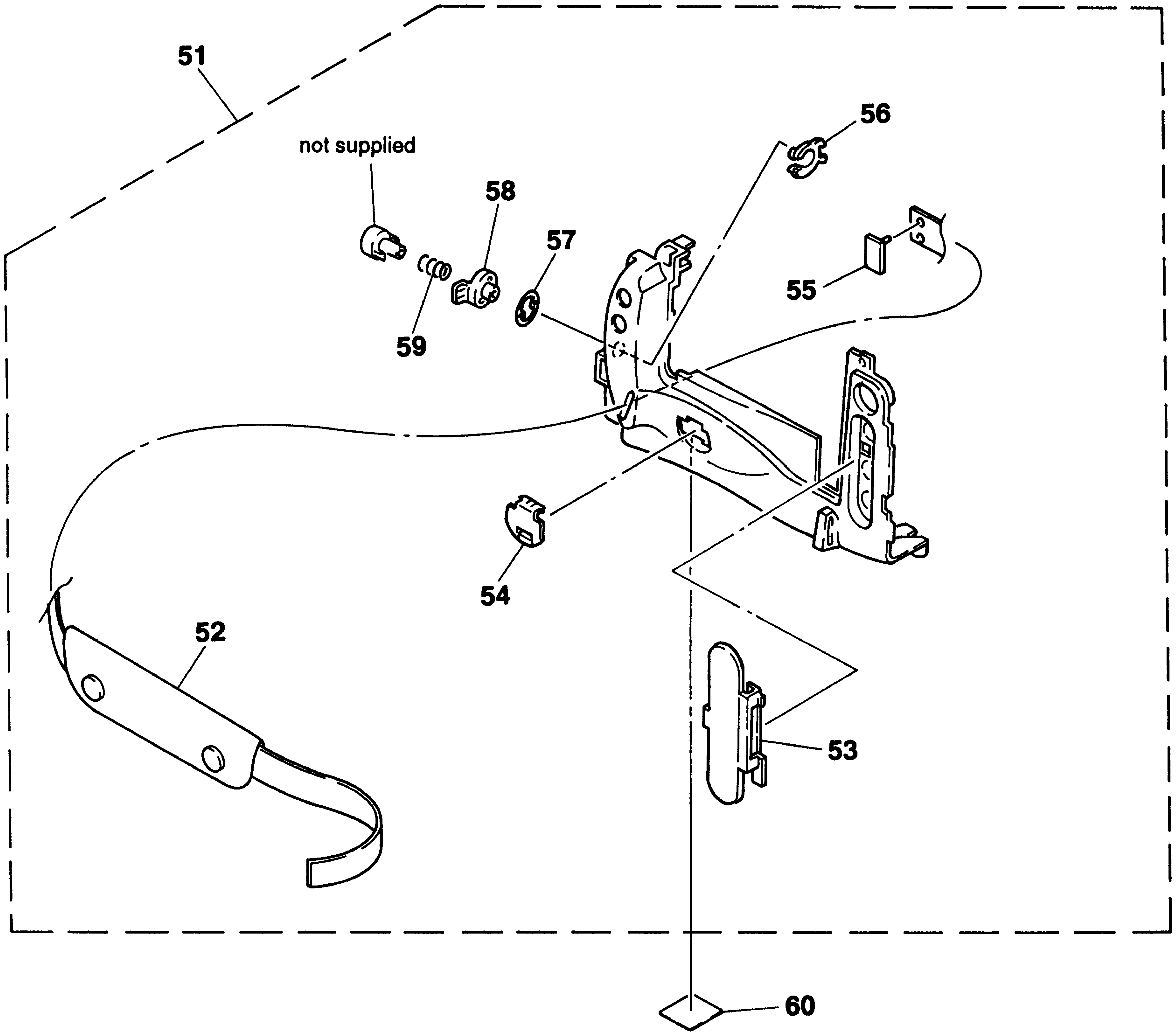
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

5-1-1. FRONT PANEL BLOCK ASSEMBLY



Ref. No.	Part No.	Description	Remark
1	X-3944-936-1	LID ASSY, CASSETTE (TR36/TR73/TR76/TR83/TR93/TR560/TR670)	
1	X-3944-987-1	LID ASSY, CASSETTE (TR100/TR600/TR880)	
2	X-3944-934-1	PANEL ASSY, FRONT (TR83/TR93/TR600)	
2	X-3945-023-1	PANEL ASSY, FRONT (TR100)	
2	X-3945-024-1	PANEL ASSY, FRONT (TR670/TR880)	
2	X-3945-027-1	PANEL ASSY, FRONT (TR36/TR73/TR76/TR560)	
3	3-964-798-01	SPRING, TENSION	
4	3-948-339-01	SCREW, TAPPING	
∗ 5	A-7066-368-A	MA-233 (M) BOARD, COMPLETE	
6	1-769-662-11	CABLE, FLEXIBLE FLAT 11P	
7	X-3944-935-1	HOLDER ASSY, MICROPHONE	
8	3-963-168-01	CAP, FRONT	
9	3-719-381-01	SCREW (M2X4)	
10	1-467-574-71	REMOTE COMMANDER (RMT-708)	
11	3-958-131-01	LID, BATTERY CASE (for RMT-708)	
M001	1-542-259-11	MICROPHONE, CAP (L-CH)	
M002	1-542-259-11	MICROPHONE, CAP (R-CH)	

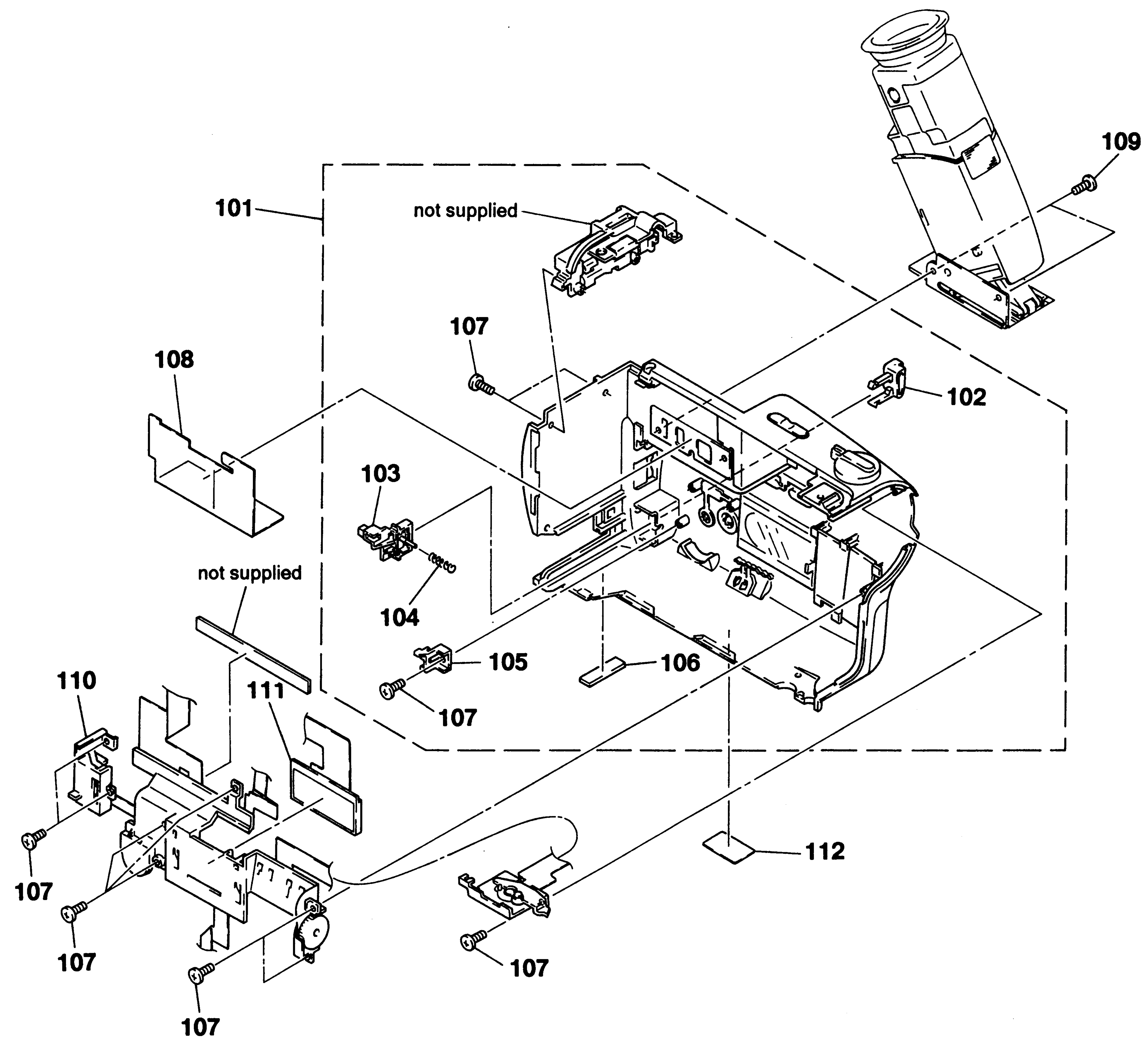
5-1-2. CABINET (L) BLOCK ASSEMBLY



Ref. No.	Part No.	Description	Remark
51	X-3943-923-1	CABINET (L) ASSY (TR36/TR73/TR76/TR83/TR93/TR560/TR670)	
51	X-3944-037-1	CABINET (L) ASSY (TR100/TR600/TR880)	
52	3-736-807-01	BELT, GRIP	
53	3-958-606-02	COVER, JACK	
54	3-958-608-01	LID, LITHIUM POWER	
55	3-942-895-01	STOPPER, BELT	
56	3-942-953-01	HOLDER, STAND-BY KNOB	

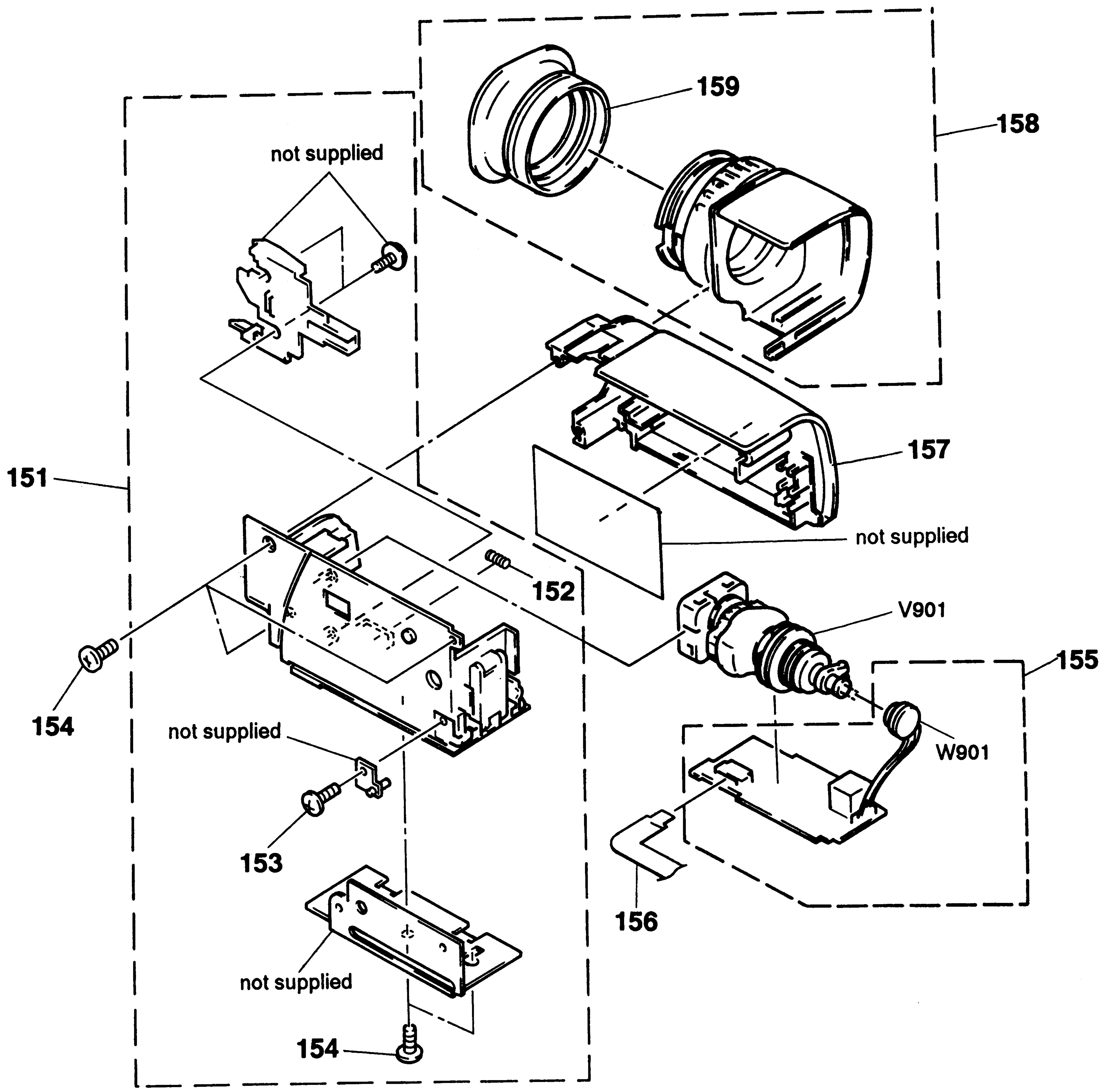
Ref. No.	Part No.	Description	Remark
57	3-736-364-01	SPRING	
58	3-942-985-01	KNOB, STAND-BY	
59	3-578-221-00	SPRING, COMPRESSION	
60	3-704-256-01	LABEL, CAUTION (TR73:US/TR76/TR93:US/TR670)	
60	3-964-317-01	LABEL, RECYCLE EMC (TR76:CND/TR93:CND/TR600:CND)	

5-1-3. CABINET (R) BLOCK ASSEMBLY



Ref. No.	Part No.	Description	Remark
101	X-3944-933-1	CABINET (R) ASSY (TR83)	
101	X-3945-015-1	CABINET (R) ASSY (TR100)	
101	X-3945-017-1	CABINET (R) ASSY (TR36)	
101	X-3945-019-1	CABINET (R) ASSY (TR93)	
101	X-3945-020-1	CABINET (R) ASSY (TR76)	
101	X-3945-021-1	CABINET (R) ASSY (TR560)	
101	X-3945-022-1	CABINET (R) ASSY (TR73)	
101	X-3945-155-1	CABINET (R) ASSY (TR600)	
101	X-3945-157-1	CABINET (R) ASSY (TR670)	
101	X-3945-158-1	CABINET (R) ASSY (TR880)	
102	3-958-618-01	BUTTON, BATTERY RELEASE	
103	3-958-620-01	CLAW, BATTERY LOCK	
104	3-426-508-00	SPRING, COMPRESSION	
105	3-958-650-01	RETAINER, BATTERY RELEASE	
106	3-949-008-01	SHEET, FOOT	
107	3-948-339-01	SCREW, TAPPING	
* 108	3-963-172-01	SHEET (2), HARNESS	
109	3-719-381-01	SCREW (M2X4)	
110	1-473-173-11	SWITCH BLOCK, CONTROL (CK) (TR83/TR93/TR670)	
110	1-473-173-21	SWITCH BLOCK, CONTROL (CK)(TR600/TR880)	
110	1-473-173-31	SWITCH BLOCK, CONTROL (CK)(TR100)	
110	1-473-173-41	SWITCH BLOCK, CONTROL (CK) (TR36/TR73/TR76/TR560)	
111	1-810-535-12	DISPLAY PANEL, LIQUID CRYSTAL	
112	3-957-897-01	LABEL, FAROUDJA RECYCLE FCC (TR36/TR73/TR76:US/TR83/TR93:US/TR100/TR600:US)	

5-1-4. W/B EVF BLOCK ASSEMBLY (TR36/TR83/TR100)

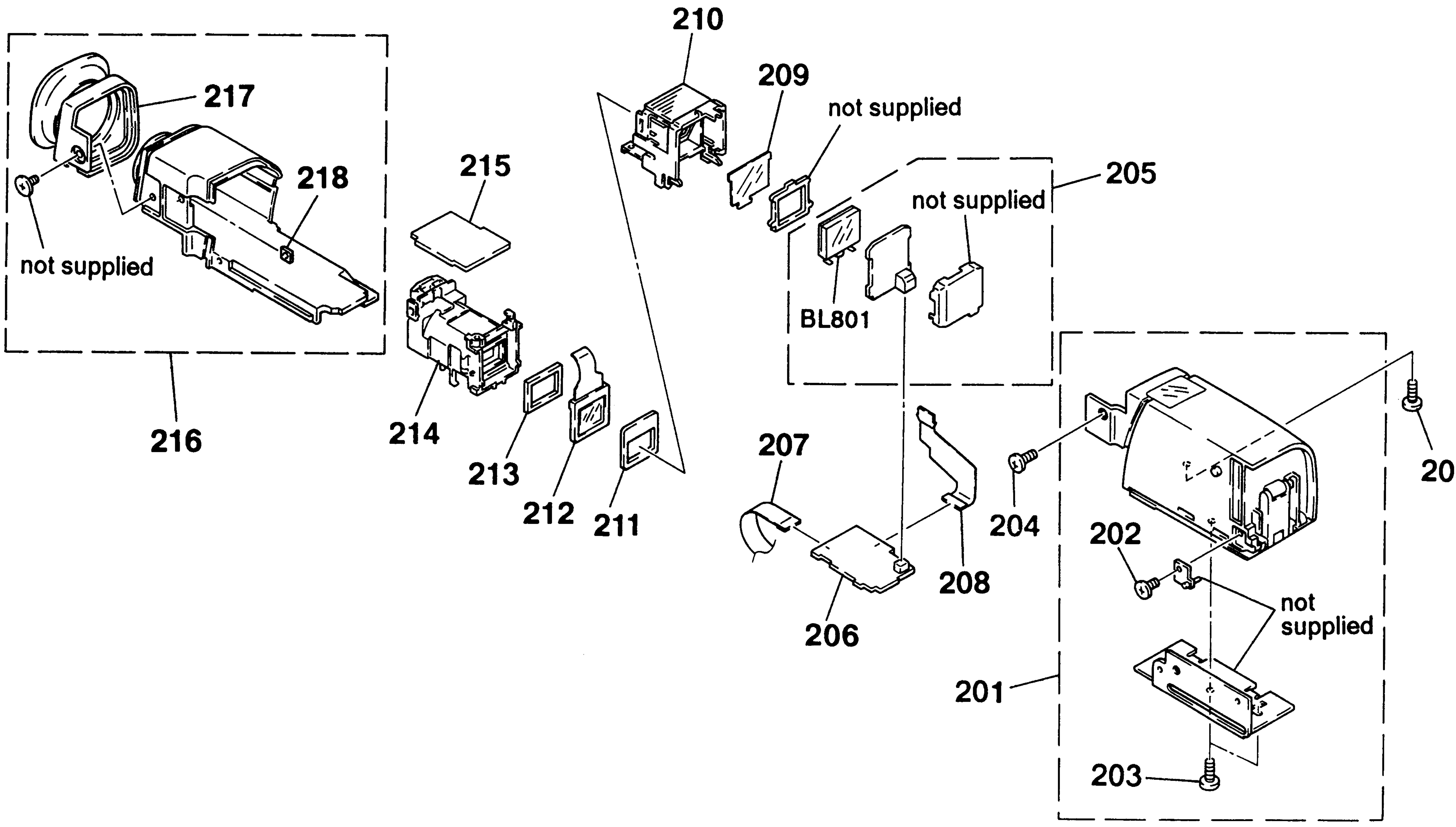


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
151	X-3944-937-1	CABINET (L) (B) ASSY, EVF	
152	3-302-492-00	SPRING, COMPRESSION	
153	3-713-791-51	SCREW (M1.7X3.5), TAPPING, P2	
154	3-948-339-01	SCREW, TAPPING	
* 155	A-7063-957-B	VF-65 BOARD, COMPLETE	
156	1-651-894-11	FP-86 FLEXIBLE BOARD	
157	3-963-161-01	CABINET (R)(B), EVF	
158	A-7082-823-A	HOLDER BLOCK ASSY, FINDER	
159	3-963-160-01	EYE CUP (DM)	
⚠V901	1-452-673-31	CRT ASSY (M01KXX90WB)	
⚠W901	1-540-019-21	SOCKET ASSY, CRT	

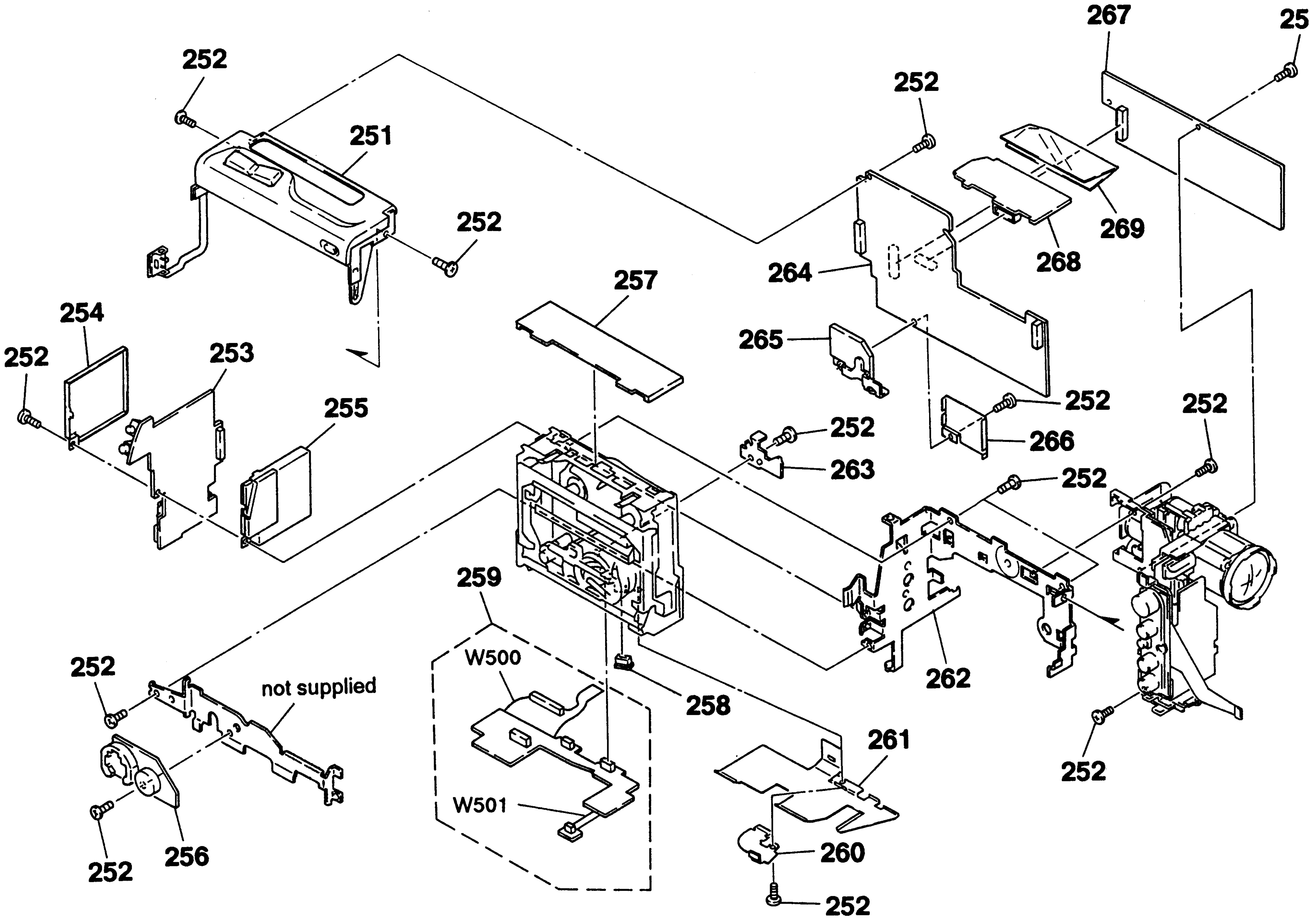
5-1-5. COLOR EVF BLOCK ASSEMBLY (TR73/TR76/TR93/TR560/TR600/TR670/TR880)



Ref. No.	Part No.	Description	Remark
201	X-3945-012-1	CABINET ASSY, EVF FRONT	
202	3-713-791-51	SCREW (M1.7X3.5), TAPPING, P2	
203	3-948-339-01	SCREW, TAPPING	
204	3-719-381-01	SCREW (M2X4)	
* 205	A-7072-210-A	LB-38 (MC) BOARD, COMPLETE	
* 206	A-7072-211-A	VF-72 (MC) BOARD, COMPLETE	
207	1-656-481-11	FP-292 FLEXIBLE BOARD	
208	1-656-480-11	FP-291 FLEXIBLE BOARD	
* 209	3-960-322-01	PLATE, CONDENSE, BL	
210	X-3945-134-1	HOLDER ASSY, PRISM	

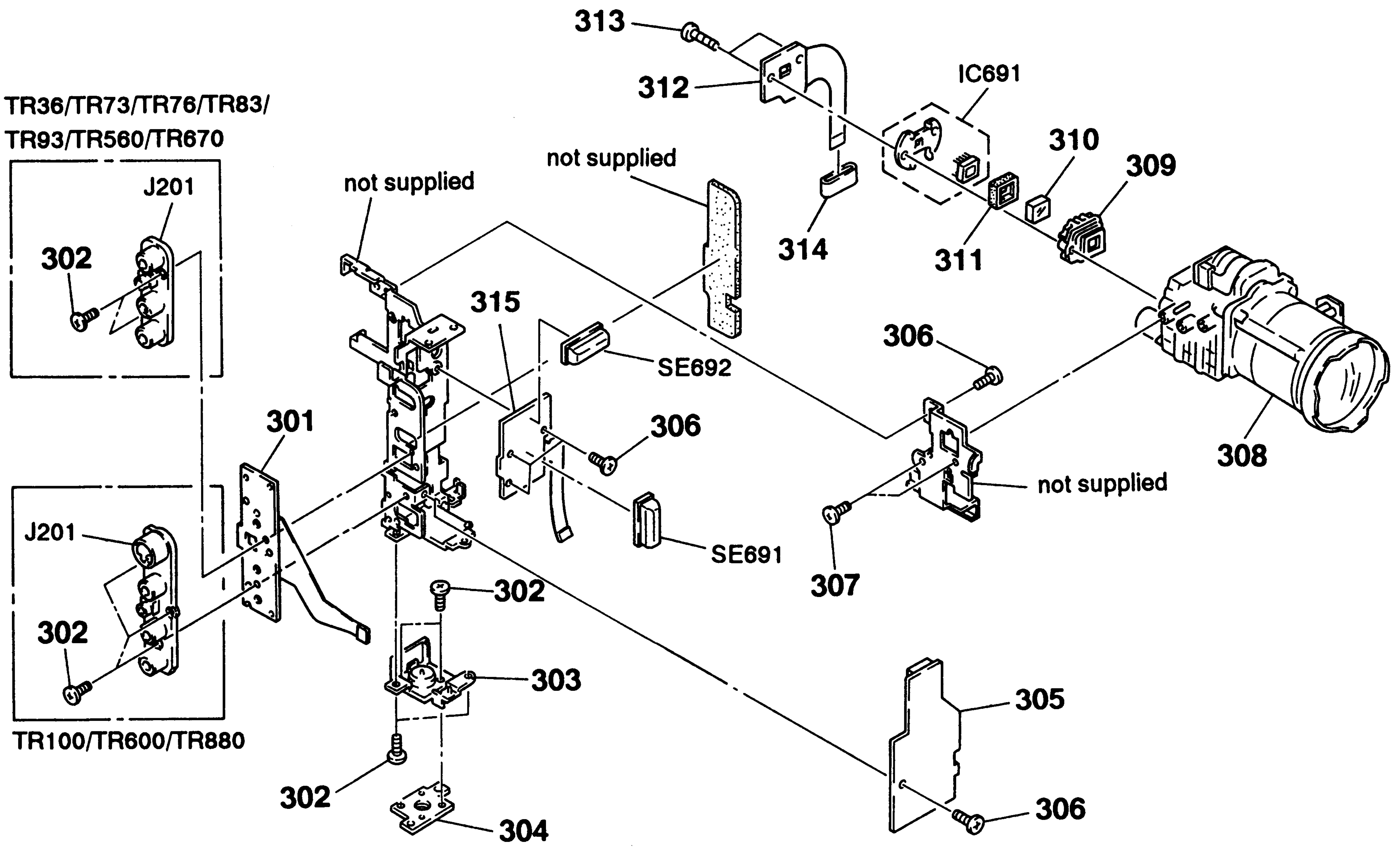
Ref. No.	Part No.	Description	Remark
* 211	3-960-347-01	CUSHION (2), LCD	
212	8-753-015-00	LCX005AK-4	
* 213	3-960-302-01	CUSHION (1), LCD	
214	X-3945-014-1	LENS ASSY, VF	
* 215	A-7072-212-A	VF-73 (MC) BOARD, COMPLETE	
216	X-3945-013-1	CABINET ASSY, EVF REAR	
217	3-963-603-01	CUP, EYE	
218	3-718-233-01	NUT, PLATE	
BL801	1-517-325-11	LAMP, FLUORESCENT (0.55 INCH)	

5-1-6. MAIN BOARDS ASSEMBLY



Ref. No.	Part No.	Description	Remark
251	1-473-132-11	SWITCH BLOCK, CONTROL (FK) (TR36/TR73/TR76/TR83/TR93/TR560/TR670)	
251	1-473-132-31	SWITCH BLOCK, CONTROL (FK) (TR100/TR600/TR880)	
252	3-713-786-21	SCREW (M2X3)	
* 253	A-7066-366-A	DD-78 (M) BOARD, COMPLETE (TR36/TR83/TR100)	
* 253	A-7066-404-A	DD-78 (MC) BOARD, COMPLETE (TR73/TR76/TR93/TR560/TR600/TR670/TR880)	
* 254	3-958-925-01	CASE (MAIN), SHIELD, DD	
* 255	3-958-926-01	CASE (LID), SHIELD, DD	
* 256	1-651-920-11	ZB-2 BOARD	
257	3-958-341-01	COVER, LS	
258	1-691-471-11	CONNECTOR, TRANSLATION 11P	
* 259	A-7072-283-A	SL-38 (FD) BOARD, COMPLETE	
260	1-651-891-11	FP-52 FLEXIBLE BOARD (TR36/TR73/TR76/TR83/TR93/TR560/TR670)	
260	1-651-892-11	FP-53 FLEXIBLE BOARD (TR100/TR600/TR880)	
* 261	3-958-928-01	PLATE, SHIELD, RP	
* 262	3-958-345-01	FRAME (U)	
* 263	3-958-667-01	FRAME (B)	
* 264	A-7066-365-A	VS-125 (M) BOARD, COMPLETE (TR83)	
* 264	A-7066-403-A	VS-125 (MC) BOARD, COMPLETE (TR93/TR670)	
* 264	A-7066-406-A	VS-125 (HL) BOARD, COMPLETE (TR100)	
* 264	A-7066-409-A	VS-125 (LC) BOARD, COMPLETE (TR73/TR76/TR560)	
* 264	A-7066-419-A	VS-125 (L) BOARD, COMPLETE (TR36)	
* 264	A-7066-482-A	VS-125 (HC) BOARD, COMPLETE(TR600/TR880)	
* 265	X-3943-976-1	SHIELD (MAIN) ASSY, RP	
* 266	3-958-924-01	CASE (LID), SHIELD, RP	
* 267	A-7066-367-A	VC-161 (M) BOARD, COMPLETE (TR83)	
* 267	A-7066-405-A	VC-161 (MC) BOARD, COMPLETE (TR93/TR600/TR670/TR880)	
* 267	A-7066-407-A	VC-161 (HL) BOARD, COMPLETE (TR100)	
* 267	A-7066-410-A	VC-161 (LC) BOARD, COMPLETE (TR73/TR76/TR560)	
* 267	A-7066-420-A	VC-161 (L) BOARD, COMPLETE (TR36)	
* 268	A-7066-408-A	HE-19 (HL) BOARD, COMPLETE (TR100/TR600/TR880)	
* 269	3-963-171-01	SHEET, HE (TR100/TR600/TR880)	
W500	1-651-889-11	FP-48 FLEXIBLE BOARD	
W501	1-642-186-11	FP-437 FLEXIBLE BOARD	

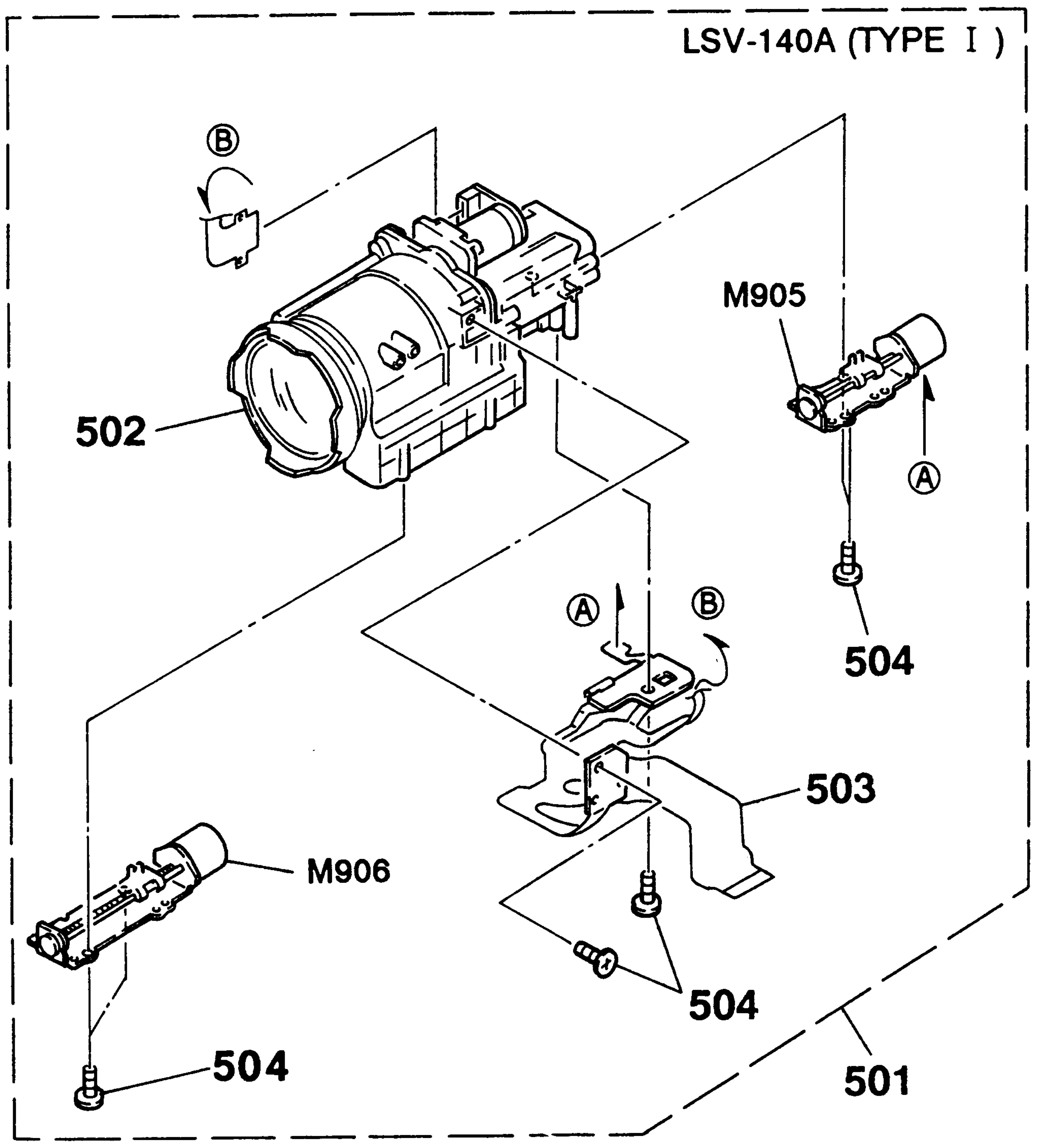
5-1-7. CCD BLOCK ASSEMBLY

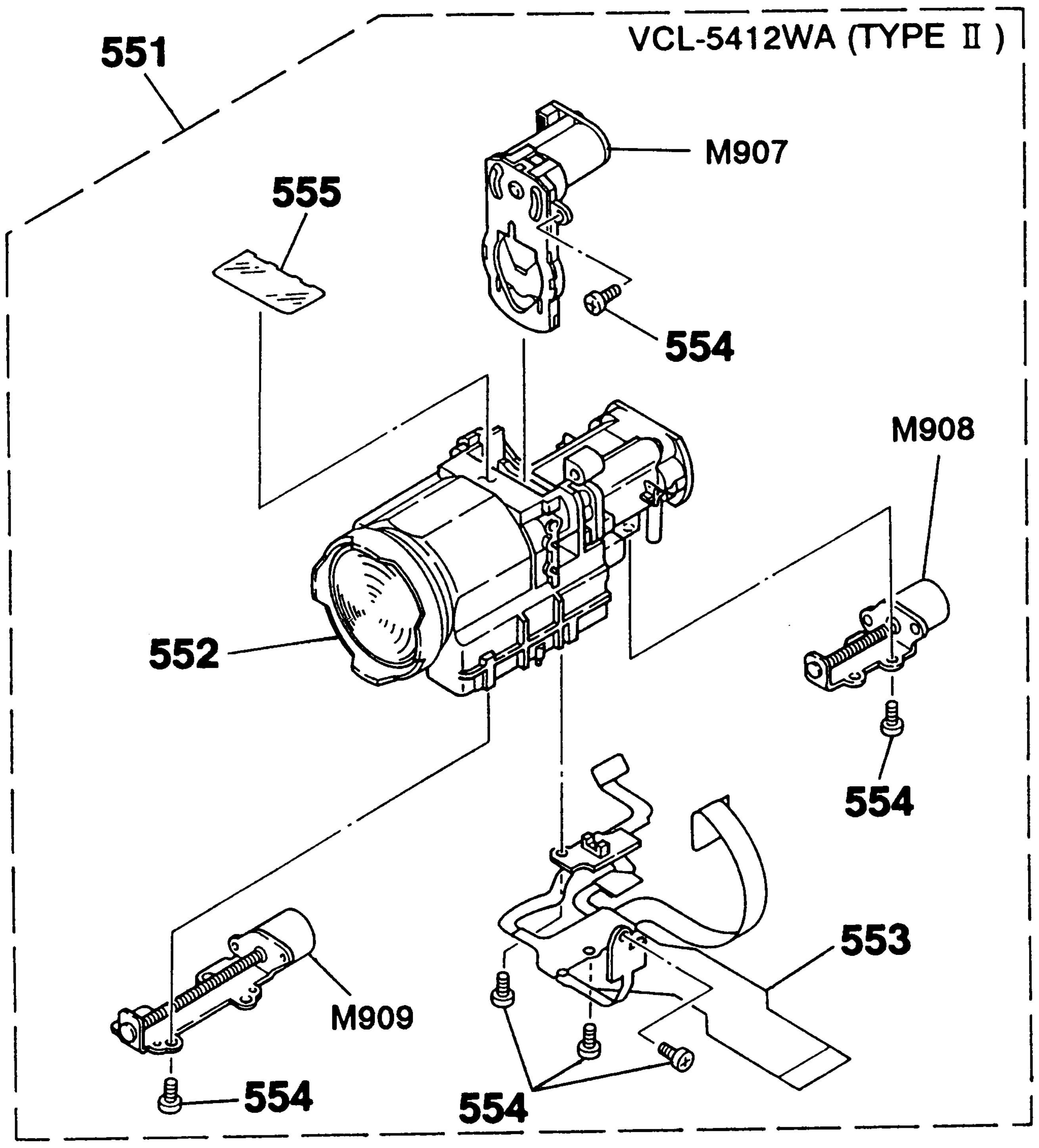


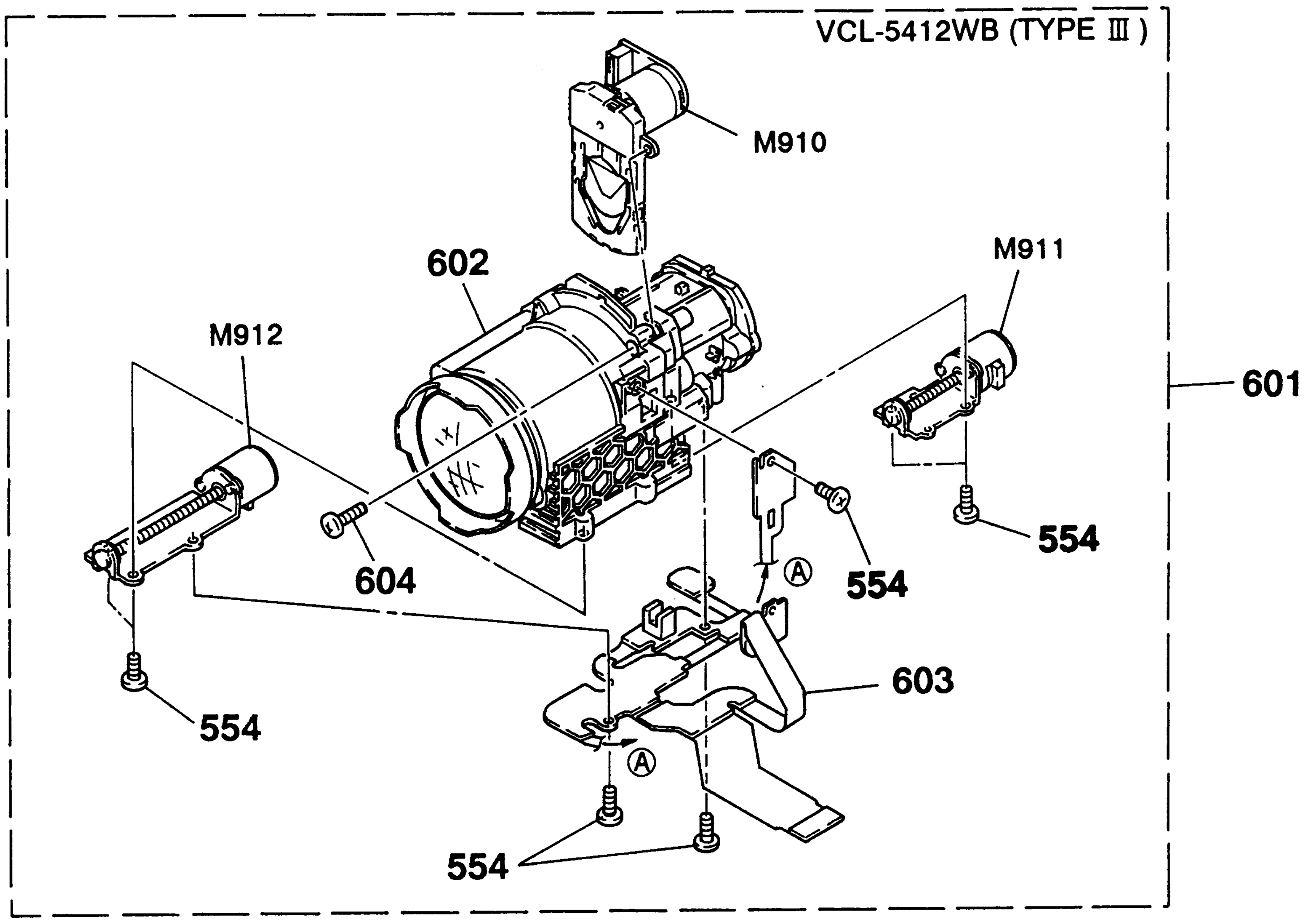
Be sure to read "Note on the CCD Imager replacement" on page 4–6 when changing the CCD imager.

Ref. No.	Part No.	Description	Remark
301	1-657-049-11	FP-44 FLEXIBLE BOARD	
302	3-719-381-01	SCREW (M2X4)	
303	3-958-310-11	HOLDER, TRIPOD	
304	3-958-286-01	SHEET METAL, TRIPOD	
* 305	A-7066-364-A	AU-184 (M) BOARD, COMPLETE	
306	3-713-786-21	SCREW (M2X3)	
307	3-948-339-01	SCREW, TAPPING	
308	1-547-716-11	LENS, ZOOM (VCL-5412WA)(TYPE II)	
308	1-547-739-11	LENS, ZOOM (VCL-5412WB)(TYPE III)	
308	8-848-704-01	DEVICE, LENS LSV-140A (TYPE I)	
309	3-946-856-01	ADAPTOR (H), CCD FITTING	
310	1-547-558-21	FILTER BLOCK, OPTICAL (TR36/TR73/TR76/TR560)	
310	1-547-735-51	FILTER BLOCK, OPTICAL (TR83/TR93/TR100/TR600/TR670/TR880)	
311	3-946-857-01	RUBBER (S), SEAL (TR36/TR73/TR76/TR560)	
311	3-960-149-01	RUBBER (3), SEAL (TR83/TR93/TR100/TR600/TR670/TR880)	
* 312	A-7072-134-A	CD-137 A BOARD, COMPLETE (TR83/TR93/TR100/TR600/TR670/TR880)	
* 312	A-7072-135-A	CD-137 B BOARD, COMPLETE (TR36/TR73/TR76/TR560)	
313	3-947-268-01	SCREW (P TIGHT)(2), TAPPING, +B	
314	1-500-227-21	BEAD, FERRITE	
315	1-651-890-11	FP-49 FLEXIBLE BOARD (TR83/TR93/TR600/TR670/TR880)	
IC691	A-7030-368-A	CCD BLOCK ASSY (054 SERVICE) (CCD IMAGER)(TR36/TR73/TR76/TR560)	
IC691	A-7030-370-A	CCD BLOCK ASSY (058 SERVICE) (CCD IMAGER)(TR100)	
IC691	A-7030-373-A	CCD BLOCK ASSY (059V SERVICE) (CCD IMAGER)(TR83/TR93/TR600/TR670/TR880)	
J201	1-537-373-51	JACK BOARD ASSY (TR100/TR600/TR880)	
J201	1-537-415-11	TERMINAL BOARD (TR36/TR73/TR76/TR83/TR93/TR560/TR670)	
SE691	1-810-725-31	SENSOR, ANGULAR VELOCITY (PITCH) (TR83/TR93/TR600/TR670/TR880)	
SE692	1-810-725-41	SENSOR, ANGULAR VELOCITY (YAW) (TR83/TR93/TR600/TR670/TR880)	

5-1-8. ZOOM LENS ASSEMBLIES (LSV-140A) (VCL-5412WA) (VCL-5412WB)

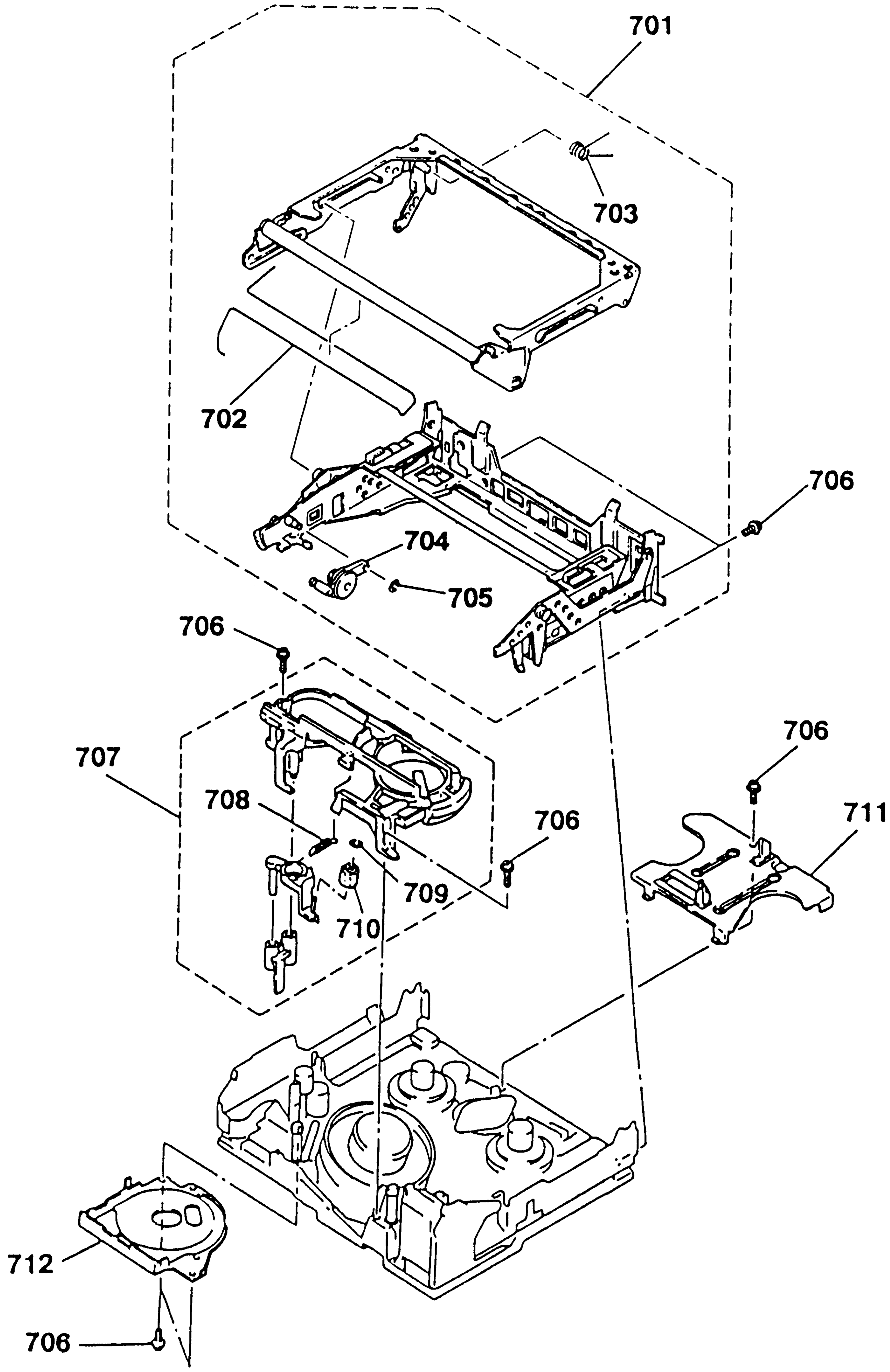






Ref. No.	Part No.	Description	Remark
501	8-848-704-01	DEVICE, LENS LSV-140A (TYPE I)	
502	A-4910-598-A	DEVICE ASSY, LSV-140A (RP)	
503	A-4915-338-A	FLEXIBLE MOUNT	
504	3-713-791-41	SCREW (M1.7X5), TAPPING, P2	
M905	1-698-364-01	MOTOR ASSY, FOCUS	
M906	1-698-363-01	MOTOR ASSY, ZOOM	
551	1-547-716-11	LENS, ZOOM (VCL-5412WA)(TYPE II)	
552	3-708-891-01	TUBE, MIRROR ASSY	
553	3-708-890-01	FLEXIBLE, MAIN	
554	3-708-302-01	SCREW (BT3 P1.7X4C)	
555	3-708-886-01	COVER, IG	
M907	3-708-888-01	METER, IG (IRIS)	
M908	3-708-889-01	MOTOR ASSY, FOCUS	
M909	3-708-887-01	MOTOR ASSY, ZOOM	
601	1-547-739-11	LENS, ZOOM (VCL-5412WB)(TYPE III)	
602	3-708-900-01	TUBE, MIRROR ASSY	
603	3-708-899-01	PC BOARD ASSY, FLEXIBLE	
604	3-708-617-01	SCREW (BT3 P1.7X7C)	
M910	3-708-898-01	IRIS ASSY	
M911	3-708-897-01	MOTOR ASSY, FOCUS	
M912	3-708-896-01	MOTOR ASSY, ZOOM	

5-1-9. CASSETTE COMPARTMENT ASSEMBLY



Ref. No.	Part No.	Description	Remark
701	A-7040-312-K	CASSETTE COMPARTMENT BLOCK ASSY	
702	3-945-773-01	BAR, TORSION	
703	3-945-771-01	SPRING, TORSION	
704	X-3941-287-2	DAMPER ASSY	
705	3-315-384-31	WASHER, STOPPER	
706	3-947-503-01	SCREW (M1.4X2.5)	
707	A-7040-309-A	PROTECT (BASE) BLOCK ASSY	
708	3-945-760-01	SPRING, TENSION	
709	3-321-393-01	WASHER, STOPPER	
710	X-3944-886-1	ROLLER ASSY, HC	
711	X-3941-280-1	RETAINER ASSY, GOOSENECK	
712	3-945-733-01	COVER, CAPSTAN	

SECTION 6
ADJUSTMENTS

6-1. CAMERA SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 6–24.

1-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

1-1-1. List of Service Tools

- Oscilloscope
- Adjusting driver
- Regulated power supply
- Color monitor
- Vectorscope
- Digital voltmeter

Ref. No.	Name	Parts Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	White balance check
	ND filter 0.3	J-6080-818-A	White balance check
J-3	Pattern box PTB-450	J-6082-200-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjusting remote commander (RM-95-remodeled partly)[Note 1]	J-6082-053-B	
J-6	Siemens star	J-6080-875-A	For checking the flange back
J-7	Extension cable (42P, 0.8 mm)	J-6082-285-A	For extension between the VC board (CN601) and VS board (CN203)
	Extension cable (34P, 0.8 mm)	J-6082-286-A	For extension between the AU board CN1302 and VS board (CN202)
J-8	Extension cable (9P, 0.8 mm)	J-6082-288-A	For extension between the control switch block (FK) and VS board (CN502)
	Extension cable (18P, 0.8 mm)	J-6082-289-A	For extension between the control switch block (CK) and VS board (CN503)
J-9	Measuring pin tool for COLOR EVF	J-6082-192-A	For adjusting the COLOR EVF

Note 1: If the micro processor IC in the adjusting remote commander is not the new micro processor (UPD7503G-C56-12), the pages cannot be switched. In this case, replace with the new micro processor (8-759-148-35).

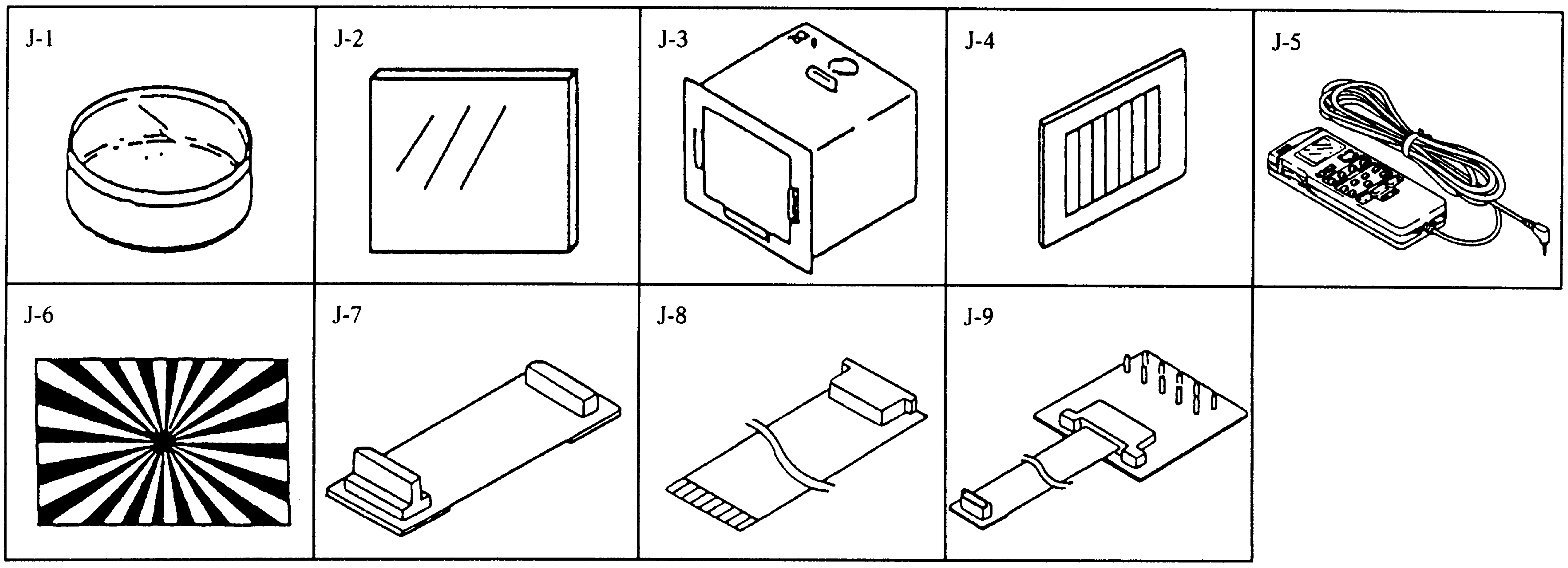


Fig. 6-1-1.

1-1-2. Preparations

Note 1: For further details of how to remove the cabinet and each board, refer to "2. Disassembly".

Note 2: When adjusting only, the lens block and VC board need not be taken apart.

1) Connect the equipments for adjusting as shown in Fig. 6-1-3.
2) The F panel block (MA board) is not required in adjustments. Remove the following connector.
   1. CN1301 of the AU board
3) If remove the cabinet (R) (Power switch, camera function switch and electronic view-finder), set to the camera power supply ON mode (Note 1), and disconnect the following connectors.
   1. CN503 of VS board
   2. CN206 of VS board
   3. CN101 of ZB board

   Be sure to exit this mode after completing the adjustment. (Note 2)
4) Turning OFF the Auto Focus Using the Adjusting Remote Commander
   1. Set data: 01 to page: 6, address: 25.
      (The auto focus will turn OFF. The focus can be adjusted using the focus button on the adjusting remote commander. But the HOLD switch must be set to OFF.)
   2. After completing the adjustment/operation check, set data: 00 to page: 6, address: 25.
5) Turning OFF the STEADY SHOT Function Using the Adjusting Remote Commander (CCD-TR83/TR93/TR600/TR670/TR880)
   1. Set data: 02 to page: 6, address: 32.
   2. Set data: 01 to page: 6, address: 33.
      (The STEADY SHOT will go OFF.)
   3. After completing the adjustment/operation check, return the data of address: 32 and address: 33 of page: 6 to 00.

Note 1: Setting the Forced Camera Power Supply ON Mode

1) Set data: 01 to page: 1, address: 00.
2) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.

By carrying out the above, the camera can be operated even if the cabinet (R) has been removed. Be sure to exit the forced camera power ON mode after completing the adjustment.

Note 2: Exiting the Forced Camera Power Supply ON Mode

1) Set data: 01 to page: 1, address: 00.
2) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 1, address: 00.

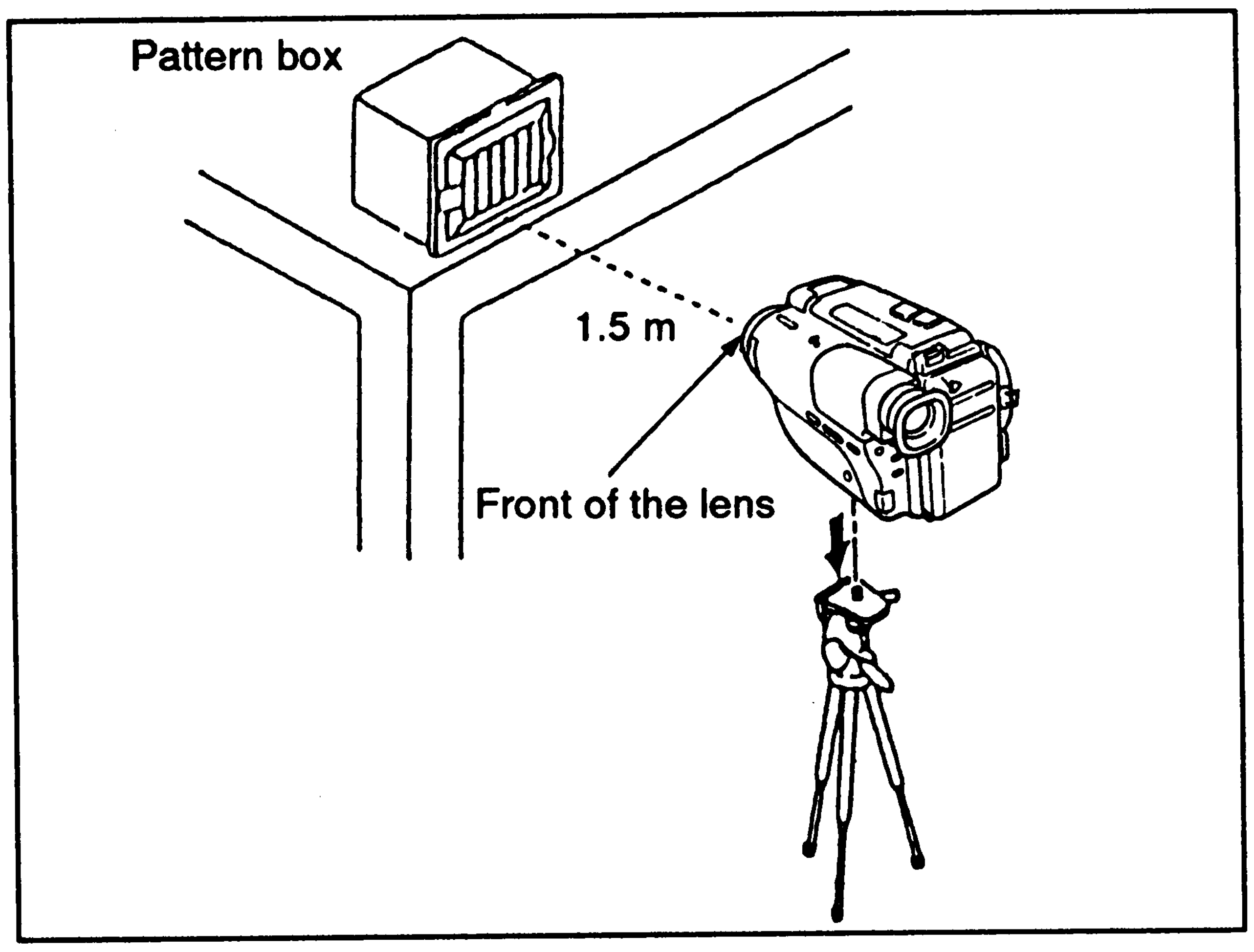


Fig. 6-1-2.

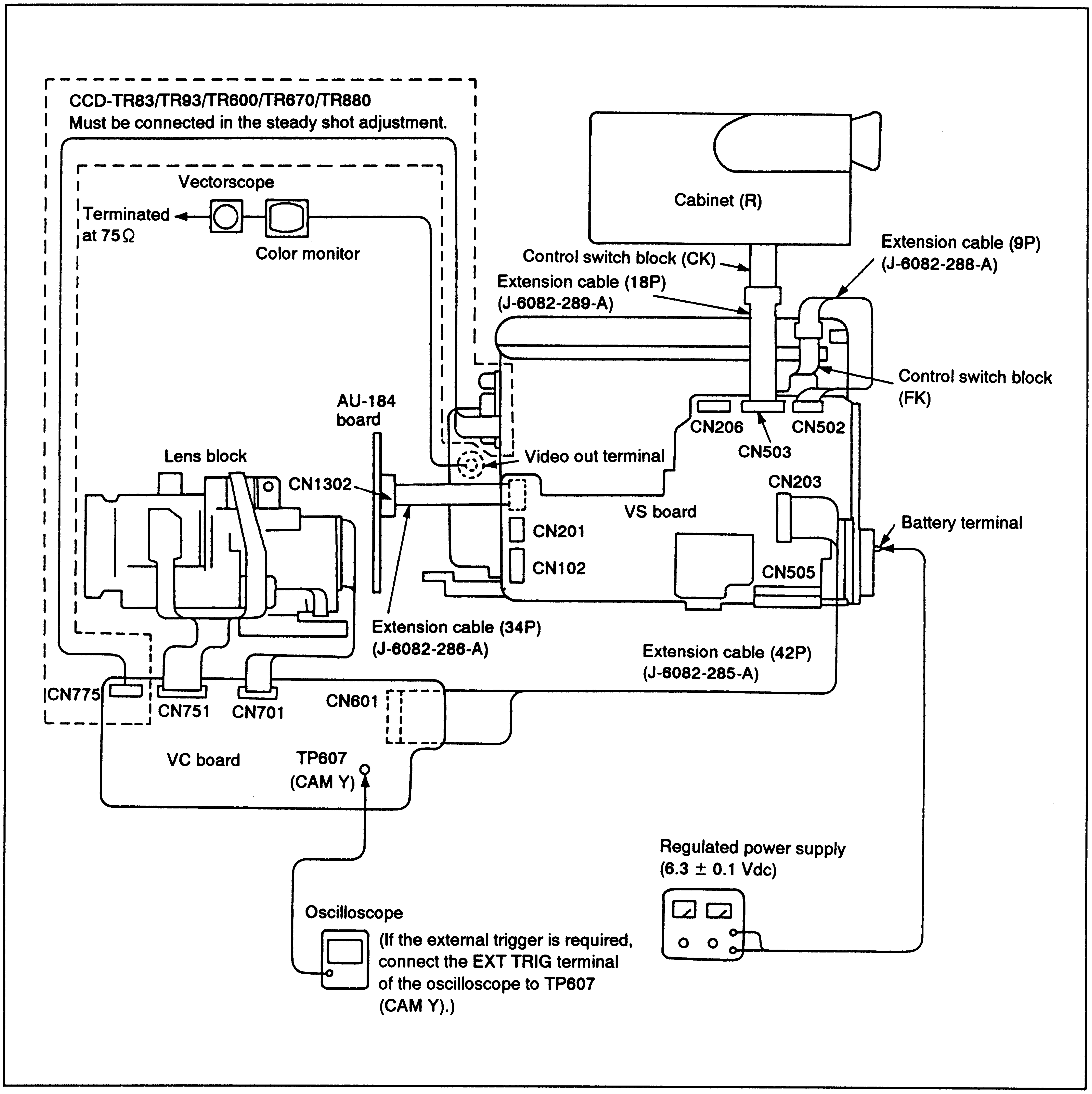

CCD-TR83/TR93/TR600/TR670/TR880
Must be connected in the steady shot adjustment.
Vectorscope
Terminated at 75Ω
Color monitor
Cabinet (R)
Control switch block (CK)
Extension cable (18P)
(J-6082-289-A)
Extension cable (9P)
(J-6082-288-A)
Control switch block
(FK)
AU-184
board
CN206
CN502
CN503
Video out terminal
Lens block
CN1302
CN203
VS board
Battery terminal
CN201
CN102
CN505
Extension cable (34P)
(J-6082-286-A)
Extension cable (42P)
(J-6082-285-A)
CN775
CN751
CN701
CN601
VC board
TP607
(CAM Y)
Regulated power supply
(6.3 ± 0.1 Vdc)
Oscilloscope
(If the external trigger is required, connect the EXT TRIG terminal of the oscilloscope to TP607 (CAM Y).)

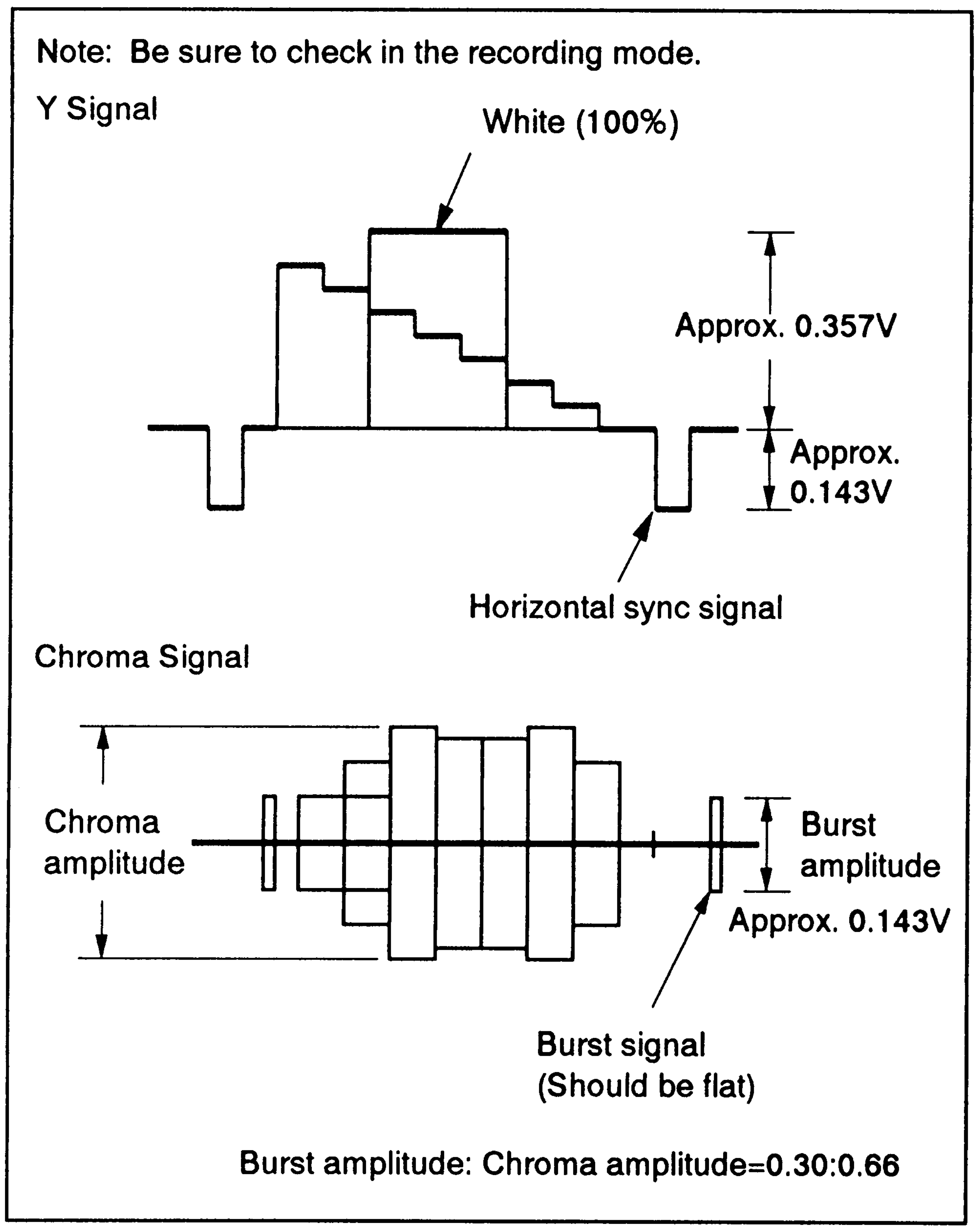
Fig. 6-1-3.

3-1-5. Checking the Input Signals

Because the video signal obtained from the pattern generator is used as the adjustment signal for adjusting the VTR section, the video output signal must satisfy the given specifications.

1. CAMERA Input

Connect the oscilloscope to Pin ⑬ of CN203 on VS board, and check that the sync signal of the Y signal is approximately 0.143 Vp-p and that the amplitude of the video section is approximately 0.357 Vp-p. (When a VTR with the S VIDEO output terminal is used, also check that the chroma signal and burst signal have not remained.) Connect the oscilloscope to Pin ⑰ of CN203 on VS board, and check that the burst signal amplitude of the chroma signal is approximately 0.143 Vp-p and flat, and that the amplitude ratio of the burst signal to the chroma signal is 0.30:0.66. The Y and chroma signals used in the adjustment are shown in Fig. 6-3-2.



Note: Be sure to check in the recording mode.

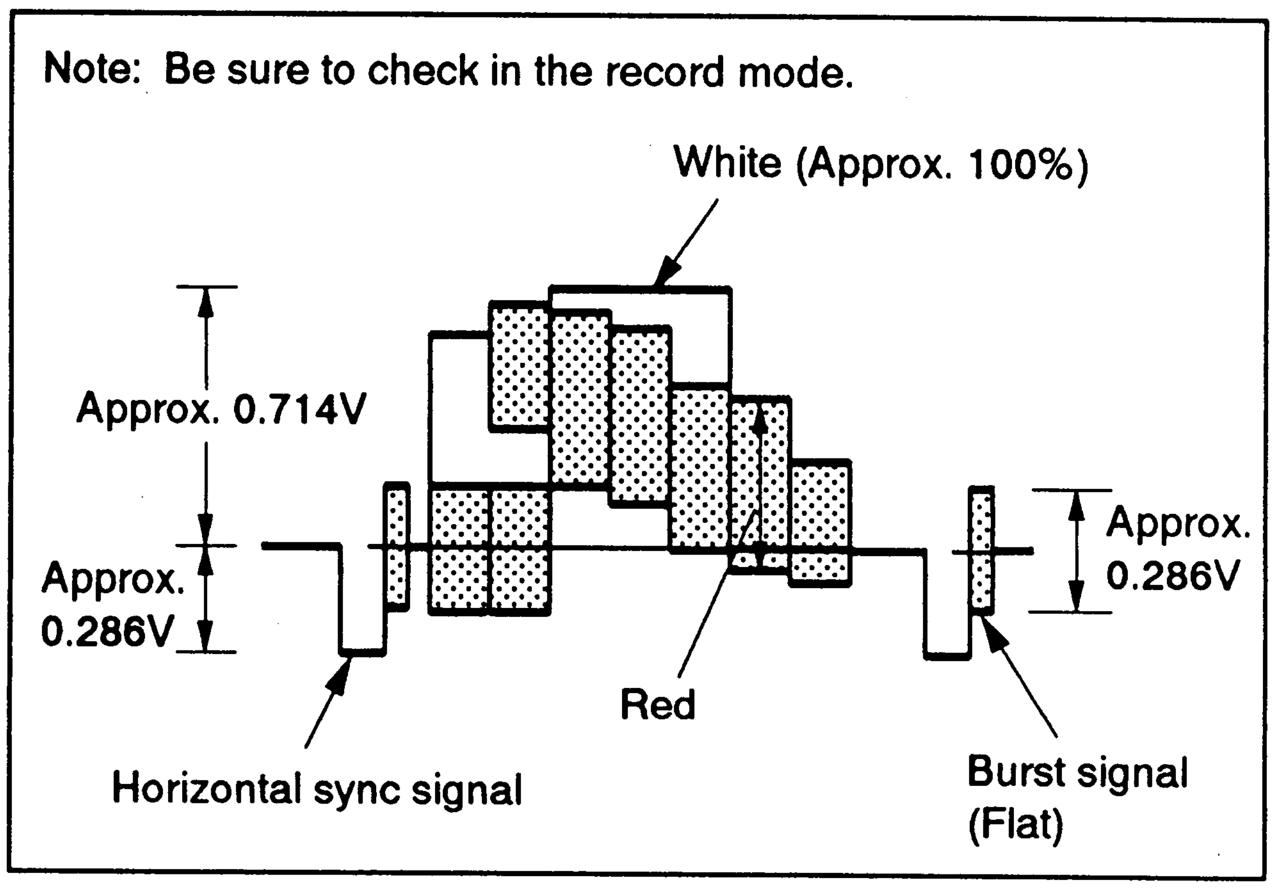
Burst amplitude: Chroma amplitude=0.30:0.66

Fig. 6-3-2. Color bar signal of pattern generator

2. VIDEO Input

Connect the oscilloscope to the video input/output terminal, and check that the sync signal amplitude of the video signal is approximately 0.286V, the amplitude of the video section is approximately 0.714V, the amplitude of the burst signal is approximately 0.286V and flat, and that the level ratio of the burst signal to the "red" signal is 0.30:0.66.

The video signal (color bar) used for adjusting the VTR section is shown in Fig. 6-3-3.



Note: Be sure to check in the record mode.

Fig. 6-3-3. Color Bar Signal of Pattern Generator

1-1-3. Precautions

1. Switch settings

Adjust the switches to the following positions, and adjust without loading the cassette tape, unless specified otherwise.

1. Camera/player (VTR) power switch (Control switch block (Control switch block (CK))···Camera
2. Standby switch (Control switch block (FK)) ·········· Standby
3. PROGRAM AE button (Control switch block (CK))······Off
4. FOCUS switch (Control switch block (CK)) ···········Manual
5. BACK LIGHT or EXPOSURE button (Control switch block (CK))··································Off
6. STEADY SHOT button (CCD-TR83/TR93/TR600/TR670/ TR880) (Control switch block (CK)) ························Off

2. Adjusting Procedure

Adjust in the given order.

3. Subject

1) Color bar chart (Standard picture frame)
   Adjust the picture frame as shown in Fig. 6-1-4. if adjustments are performed using the color bar chart. (Standard picture frame)
2) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box, and so that the white pattern will be displayed.
   Don't touch the zoom switch.

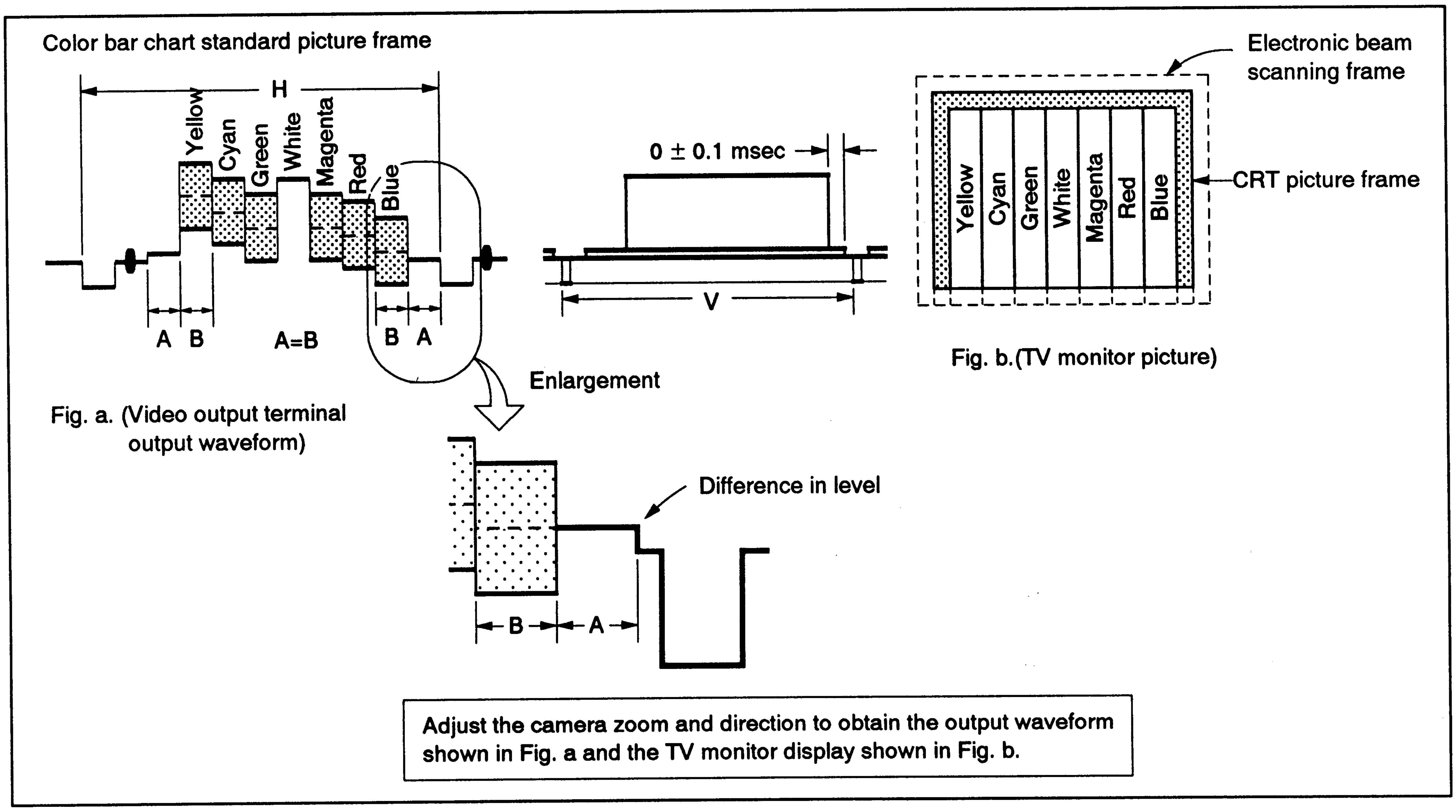

Color bar chart standard picture frame
H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A
Fig. a. (Video output terminal output waveform)
0 ± 0.1 msec
V
Enlargement
Difference in level
B
A
Electronic beam scanning frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue
Fig. b.(TV monitor picture)
Adjust the camera zoom and direction to obtain the output waveform shown in Fig. a and the TV monitor display shown in Fig. b.

Fig. 6-1-4.

3) Chart for flange back adjustment
   Combine a white A0 size (1189 mm× 841 mm) paper to a black one, and make the chart shown in Fig. 6-1-5.

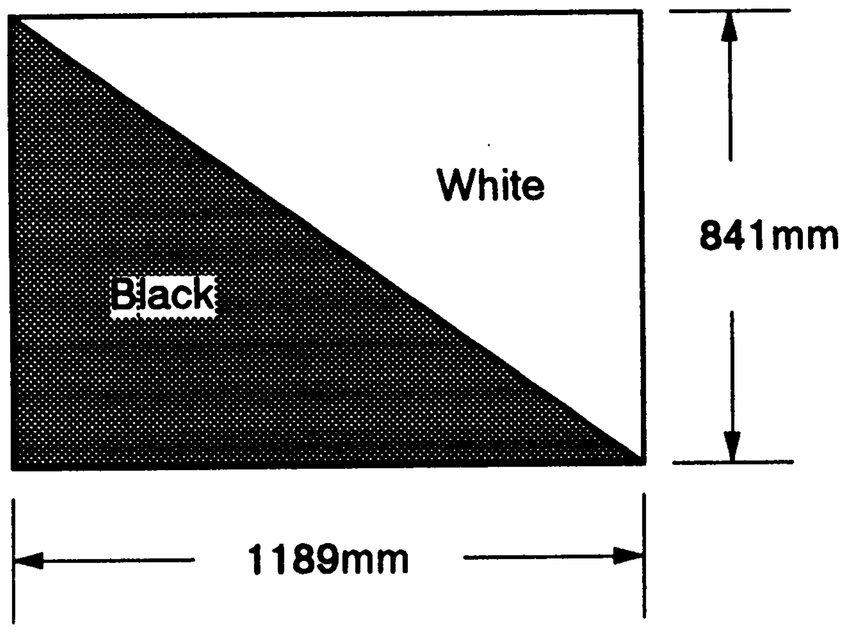


Fig. 6-1-5.

Note: Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

1-1-4. Adjusting Remote Commander

Use the adjusting remote commander to change the coefficient of the digital signal processing or the EVR data.
The adjusting remote commander uses the remote commander signal line (LANC) to perform the bidirectional communication with the camera microprocessor. The effect data of the bidirectional communication must be written in the nonvolatile memory.

1. Using the adjusting remote commander

1) Connect the adjusting remote commander to the remote terminal.
2) Adjust the HOLD switch of the adjusting remote commander to "HOLD" (SERVICE position).

If it has been properly connected, the LCD on the adjusting remote commander will display as shown in Fig. 6-1-6.

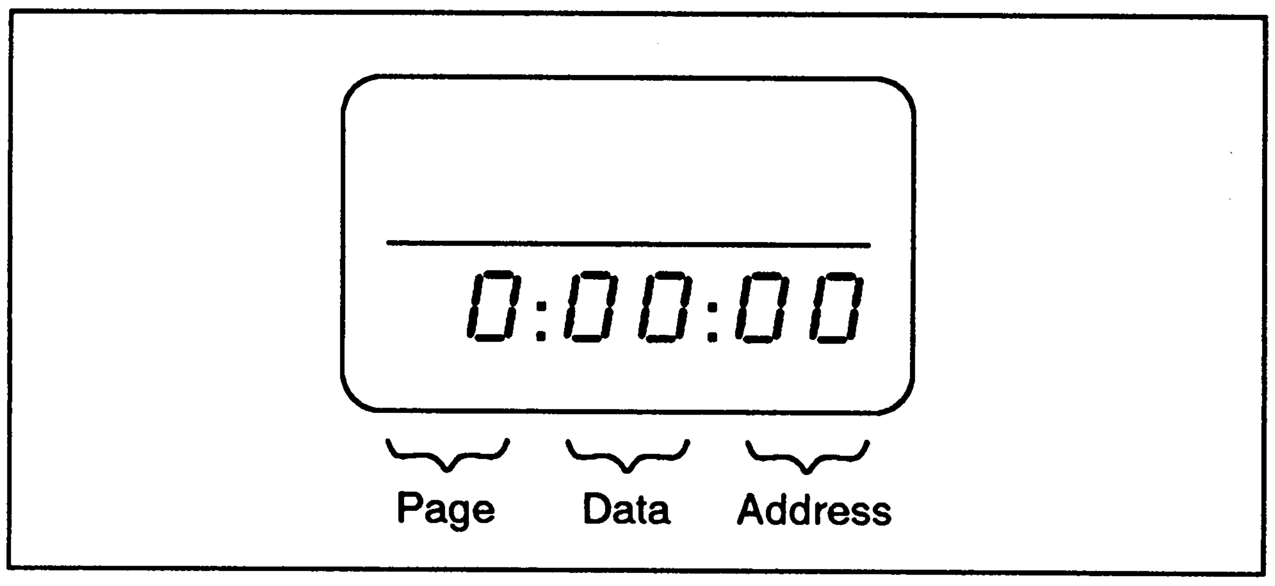


Fig. 6-1-6.

3) Operate the adjusting remote commander as follows.
   - Changing the page
     The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LCD Display	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 6-1-1.

   - Changing the address
     The address increases when the FF (▶▶) button is pressed, and decreases when the REW (◀◀) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the PLAY (▶) button is pressed, and decreases when the STOP (■) button is pressed.
     There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The PAUSE button must be pressed to write the adjustment data (F page) in the nonvolatile memory.
     (The new adjustment data will not be recorded in the nonvolatile memory if this step is not performed.)
4) Select page: 6, address: 00, and adjust the data to 01. Page F, and enables the camera section (Addresses 01 to BF of page F) to be adjusted.
5) After completing all adjustments, turn off the main power supply (6.3V) once.

2. Precautions upon using the adjusting remote commander

Mishandling of the adjusting remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

1-1-5. Page F Address List

Note 1: The data already listed in the adjustment data memo column are fixed values.

Note 2: The adjustment data initial values are values just after executing "Page F Data Initialization" and "Page F Data Modification". They are different from the values after executing all adjustments.

Note 3: In some cases, data have been input to the page F addresses C0 to FF. This has no relation to the adjustments.

Note 4: No mark : CCD-TR83/TR93/TR100/TR600/TR670/TR880
( ) : CCD-TR36/TR73/TR76/TR560
*1 : 80 (CCD-TR600/TR880)
82 (CCD-TR100)
84 (CCD-TR83/TR93/TR670)
86 (CCD-TR73/TR76/TR560)
88 (CCD-TR36)
*2 : 00 (CCD-TR100)
02 (CCD-TR36/TR73/TR76/TR560)
20 (CCD-TR83/TR93/TR600/TR670/TR880)
*3 : 40 (Others)
47 (CCD-TR83/TR93/TR600/TR670/TR880)
*4 : 23 (CCD-TR83/TR93/TR600/TR670/TR880)
A3 (Others)
*5 : 10 (CCD-TR36/TR73/TR76/TR560)
28 (CCD-TR100)
34 (CCD-TR83/TR93/TR600/TR670/TR880)
*6 : 25 (CCD-TR83/TR93/TR670)
26 (CCD-TR100/TR600/TR880)
28 (CCD-TR36/TR73/TR76/TR560)
*7 : 43 (CCD-TR83/TR93/TR670)
44 (CCD-TR100/TR600/TR880)
54 (CCD-TR36/TR73/TR76/TR560)
*8 : 02 (Others)
12 (CCD-TR83/TR93/TR600/TR670/TR880)
*9 : D8 (CCD-TR83/TR93/TR670)
E0 (CCD-TR600/TR880)
E8 (CCD-TR100)
F8 (CCD-TR36/TR73/TR76/TR560)
*10 : 75 (CCD-TR100)
B5 (CCD-TR83/TR93/TR600/TR670/TR880)
A5 (CCD-TR36/TR73/TR76/TR560)

Address	Adjustment data	
	Initial value	Memo column
00	*1	*1
01	*2	*2
02	00	00
03	*3	*3
04	80	
05	80	
06	80	
07	80	
08	2D	
09	26	
0A	FA	
0B	F1	
0C	30	
0D	00	
0E	58	
0F	00	
10	E0	E0
11	8F	
12	6C	
13	36	
14	3C	
15	B6	
16	0D	
17	A3	
18	12	
19	8E	
1A	10	
1B	E2	
1C	0C	0C
1D	00	00
1E	80	
1F	80	
20	79	79
21	79	79
22	00	00
23	59	53
24	43	43
25	*10	*10
26	45	45
27	3F	3F
28	*4	*4
29	0B	0B

Table 6-1-2 (1).

Address	Adjustment data	
	Initial value	Memo column
2A	*5	*5
2B	58	58
2C	FF	FF
2D	26	26
2E	16 (17)	16 (17)
2F	*6	*6
30	00	00
31	00	00
32	*7	*7
33	68	68
34	02	
35	35	35
36	02	02
37	00	00
38	83	83
39	6A	6A
3A	50	50
3B	20	20
3C	C0	C0
3D	00	00
3E	00	
3F	00	
40	00	
41	00	
42	00	
43	00	
44	00	
45	00	
46	00	
47	00	
48	00	
49	00	
4A	00	
4B	00	
4C	00	
4D	00	
4E	00	00
4F	20	20
50	*8	*8
51	02	02
52	66	66
53	18	18

Table 6-1-2 (2).

Address	Adjustment data	
	Initial value	Memo column
54	6B (66)	6B (66)
55	9F	9F
56	66	66
57	6C (66)	6C (66)
58	5C (59)	5C (59)
59	83	83
5A	67	67
5B	5C	5C
5C	5C	5C
5D	4A	4A
5E	20 (1E)	20 (1E)
5F	5C	5C
60	3C (3A)	3C (3A)
61	33	33
62	0C	0C
63	26	26
64	24	24
65	02	02
66	04	04
67	05	05
68	00	00
69	00	00
6A	04	04
6B	00	00
6C	04	04
6D	00	00
6E	02	02
6F	33	33
70	B0	B0
71	18	18
72	0F	0F
73	0F	0F
74	00	00
75	63	63
76	1B	1B
77	*9	*9
78	A0	A0
79	30	30
7A	10	10
7B	50	50
7C	58	58
7D	88	88

Table 6-1-2 (3).

Address	Adjustment data	
	Initial value	Memo column
7E	66	66
7F	46	46
80	8F	8F
81	00	00
82	20	20
83	18	18
84	02	02
85	08	08
86	40	40
87	20	20
88	40	40
89	30	30
8A	50	50
8B	60	60
8C	80	80
8D	1D	1D
8E	50	50
8F	00	00
90	00	00
91	77	77
92	00	00
93	FB	FB
94	04	04
95	32	32
96	6B	6B
97	8D	8D
98	A1	A1
99	30	30
9A	30	30
9B	21	21
9C	91	91
9D	00	00
9E	00	00
9F	00	00
A0	00	00
A1	00	00
A2	00	00
A3	02	02
A4	80	80
A5	00	00
A6	80	80
A7	00	00

Table 6-1-2 (4).

Address	Adjustment data	
	Initial value	Memo column
A8	00	00
A9	80	80
AA	00	00
AB	80	80
AC	00	00
AD	00	00
AE	02	02
AF	44	44
B0	3D	3D
B1	25	25
B2	3D	3D
B3	25	25
B4	12	12
B5	4B	4B
B6	40 (00)	40 (00)
B7	20	20
B8	00	00
B9	05	05
BA	00	00
BB	20	20
BC	80	80
BD	00	00
BE	*8	*8
BF	*9	*9
C0 to EF		
F0		
F1		
F2		
F3		
F4		
F5		
F6		
F7		
F8		
F9		
FA		
FB		
FC		
FD		
FE		
FF		

Table 6-1-2 (5).

*8 : 6B (CCD-TR83/TR93/TR600/TR670/TR880)
69 (CCD-TR100)
6E (CCD-TR36/TR73/TR76/TR560)

*9 : 2F (CCD-TR83/TR93/TR600/TR670/TR880)
2E (CCD-TR100)
32 (CCD-TR36/TR73/TR76/TR560)

1-1-6. Data Processing

The calculation of the DDS display and the adjusting remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 6-1-3. indicates the hexadecimal notation-the decimal notation calculation table.

Hexadecimal notation-Decimal notation

The lower digits of the hexadecimal notation / The upper digits of the hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	② D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	80	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① **B (b)**	176	177	178	179	180	180	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: ( ) indicate the adjusting remote control unit display.

(Example) In the case that the DDS display and the adjusting remote control unit display are BD (b d).
As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection "189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 6-1-3.

Before You Begin

Checking Your Model Number

The instructions in this manual are for the five models listed below. Before you start reading this manual and operating the unit, check your model number by looking at the bottom of your camcorder. The CCD-TR93 is the model used for illustration purposes. Otherwise, the model name is indicated in the illustrations. Any differences in operation are clearly indicated in the text, for example, "CCD-TR36 only."
As you read through this manual, buttons and settings on the camcorder are shown in capital letters.
e.g. Set the POWER switch to CAMERA.

Types of differences

Model number	Steady Shot	Picture Effect	Viewfinder		Zoom (x)
			Monochrome	Color	
CCD-TR36*		5 modes	•		12
CCD-TR73*				•	12
CCD-TR76		5 modes		•	12
CCD-TR83	•	7 modes	•		24 (Digital)
CCD-TR93	•	7 modes		•	24 (Digital)

* **CCD-TR36/TR73** are the U. S. A. models.

Note on TV Color Systems

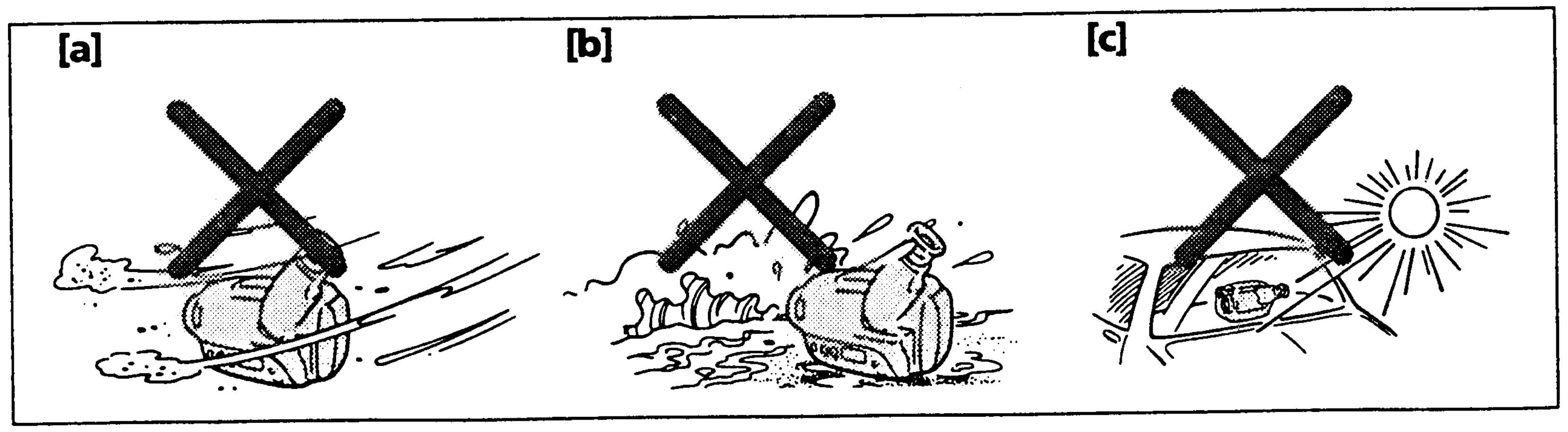
TV color systems differ from country to country. To view your recordings on a TV, you need an NTSC system-based TV. When you want to use a PAL-M system-based TV, you will need an NTSC/PAL-M transcoder (as this is an NTSC system based camcorder). Please check the list on page 39 to find out the TV color system used in your country.

Precaution on Copyright

Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

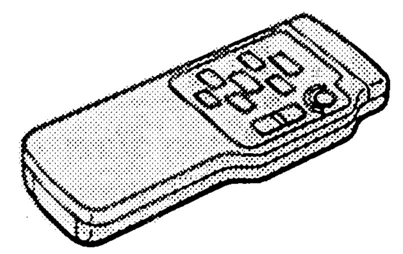
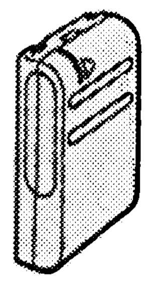
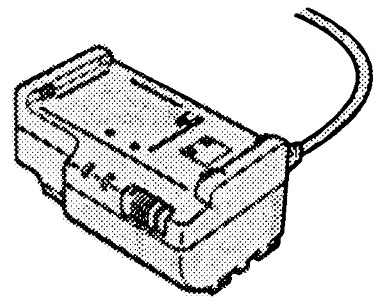
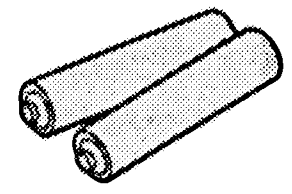
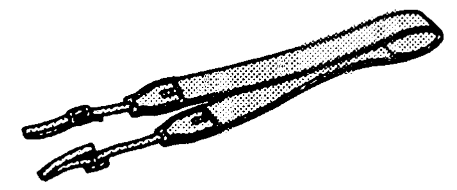
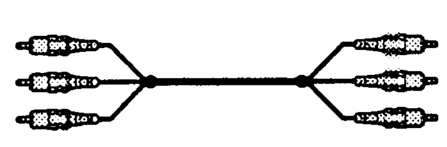
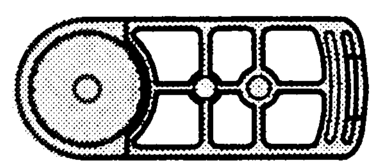
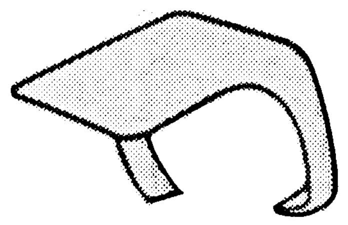
Precautions on Camcorder Care

- **Do not let sand get into the camcorder. When you use the camcorder on a sandy beach or dusty place, protect it from the sand or dust. Sand or dust may cause the unit to malfunction and sometimes the malfunction cannot be repaired [a].**
- **Do not let the camcorder get wet. Keep the camcorder away from rain and sea water. Letting the camcorder get wet may cause the unit to malfunction and sometimes the malfunction cannot be repaired [b].**
- **Never leave the camcorder exposed to temperatures above 140 °F (60 °C), such as in a car parked in the sun or under direct sunlight [c].**



Checking Supplied Accessories

Check that the following accessories are supplied with your camcorder.

1 	2 	3 
4	5 	6 
7 	8 	9 

1 **Wireless Remote Commander** (1) (p. 48)
2 **NP-55 Battery pack** (1) (p. 6)
3 **AC-V25A/V25B/V25C AC power adaptor** (1) (p. 6, 18)
4 **CR2025 Lithium Battery** (1) (p. 31)
(The lithium battery is already installed in your camcorder.)
5 **Size AA (R6) battery for Remote Commander** (2) (p. 48)
6 **Shoulder strap** (1) (p. 47)
7 **A/V connecting cable** (1) (p. 15)
8 **Tripod adaptor** (1) (p. 13)
9 **Shading cover** (**CCD-TR73/TR76/TR93** only) (1)

Contents of the recording cannot be compensated if recording or playback is not made due to a malfunction of the camcorder, video tape, etc.

SECTION 1
GENERAL

This section is extracted from instruction manual of CCD-TR36/TR73/TR76/TR83/TR93.

Charging and Installing the Battery Pack

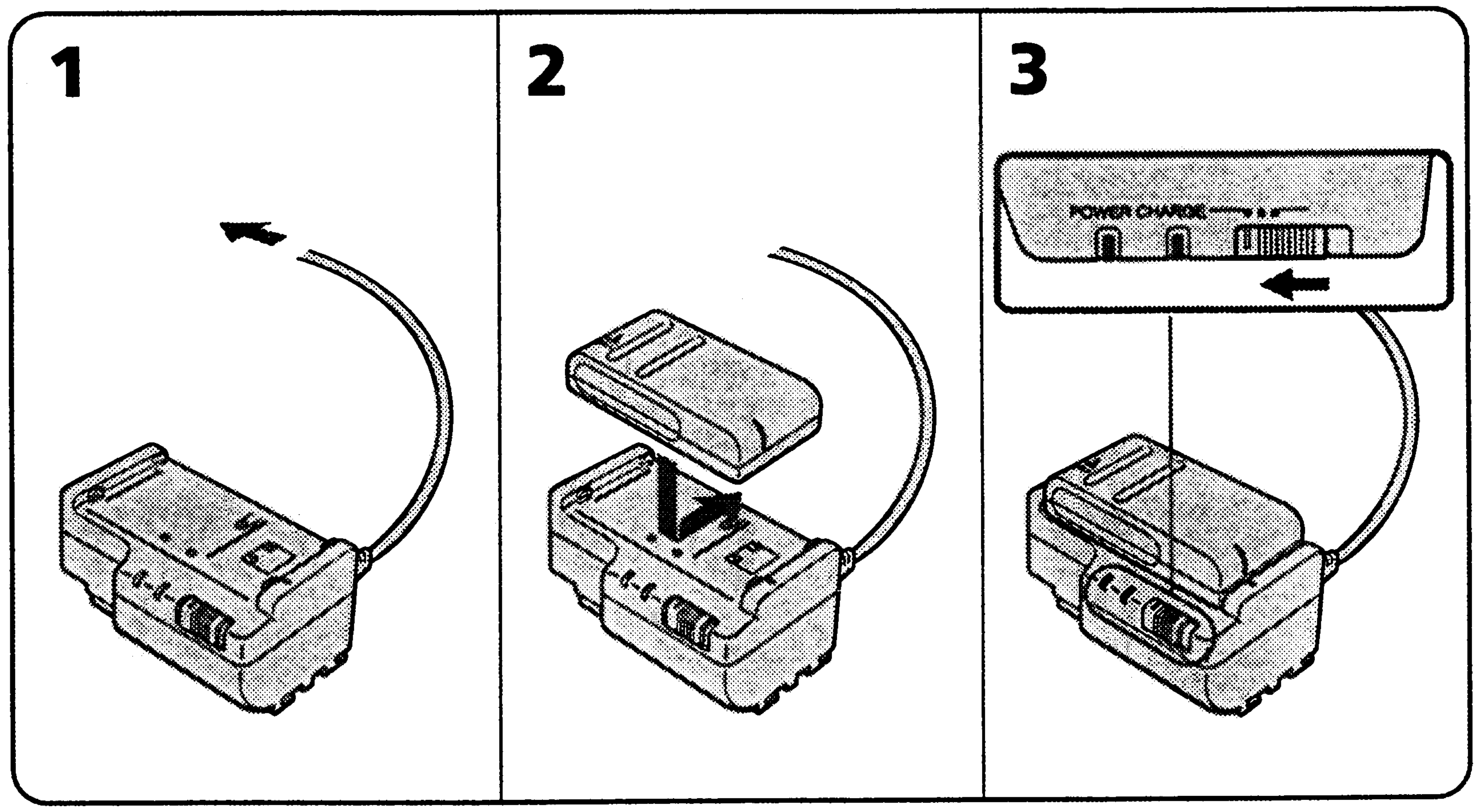
Before using your camcorder, you first need to charge and install the battery pack. To charge the battery pack, use the supplied AC power adaptor.

Charging the Battery Pack

Charge the battery pack on a flat surface without vibration.

(1) Connect the power cord to a wall outlet.
(2) Align the right side of the battery pack with the line on the AC power adaptor, then slide the battery pack in the direction of the arrow.
(3) Set the selector to CHARGE. The CHARGE lamp (orange) lights up. Charging begins.

When charging is completed, the CHARGE lamp goes out. Set the selector to the center position and unplug the unit from the wall outlet. Then remove the battery pack and install it on the camcorder. To stop charging, set the selector to the center position.



Charging Time

Battery pack	NP-55 (supplied)	NP-80 NP-80D	NP-77H	NP-68 NP-66H	NP-C65	NP-60D
Charging time*	70	190	170	125	105	90

* Approximate minutes to charge an empty battery pack using the supplied AC power adaptor. (Lower temperatures require a longer charging time.)

Battery Life

CCD-TR36

Battery pack	NP-55 (supplied)	NP-80 NP-80D	NP-77H	NP-68 NP-66H	NP-C65	NP-60D
Typical recording time**	30	85	85	65	45	40
Continuous recording time***	60	165	160	115	90	80

CCD-TR73/TR76

Battery pack	NP-55 (supplied)	NP-80 NP-80D	NP-77H	NP-68 NP-66H	NP-C65	NP-60D
Typical recording time**	30	80	80	60	45	40
Continuous recording time***	60	160	150	110	85	80

CCD-TR83

Battery pack	NP-55 (supplied)	NP-80 NP-80D	NP-77H	NP-68 NP-66H	NP-C65	NP-60D
Typical recording time**	30	75	75	55	40	35
Continuous recording time***	55	145	140	105	80	70

CCD-TR93

Battery pack	NP-55 (supplied)	NP-80 NP-80D	NP-77H	NP-68 NP-66H	NP-C65	NP-60D
Typical recording time**	25	70	70	50	40	35
Continuous recording time***	50	140	135	100	75	65

** Approximate minutes when recording while you repeat recording start/stop or zooming and turning the power on/off. The actual battery life may be shorter.

*** Approximate continuous recording time indoors.

Important!

Use the battery completely before re-charging!

Before you recharge the battery pack, make sure the battery has been used up (discharged) completely. Repeated charging while some capacity remains causes a lowering of battery capacity. However, the original battery capacity can be recovered if you use the battery completely and charge it fully again.

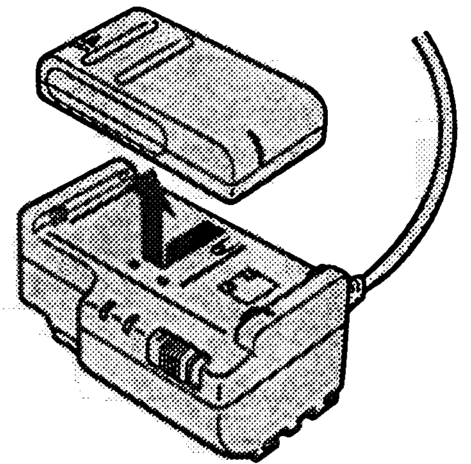
To use up the battery, remove the cassette and turn the POWER switch to CAMERA with the battery pack attached, and leave the camcorder until the ▭ indicator flashes and the red lamp flashes rapidly in the viewfinder.

See the next page for further information.

Charging and Installing the Battery Pack

Removing the Battery Pack

Slide the battery pack in the direction of the arrow.

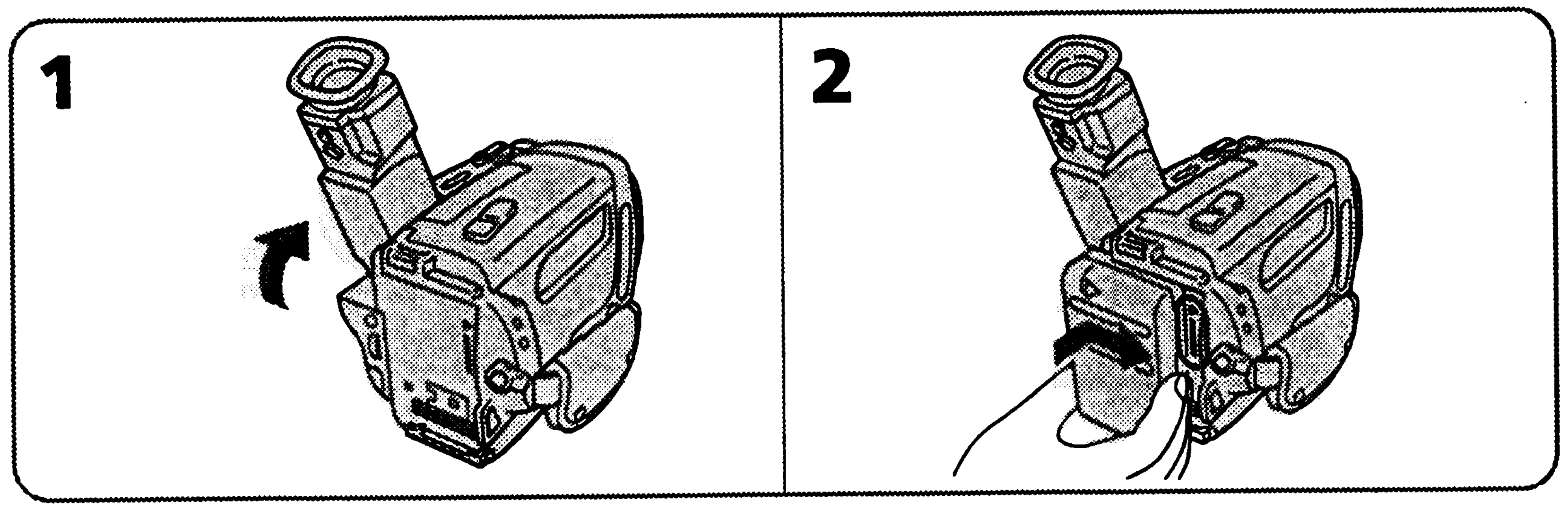


Notes on charging the battery pack

- The POWER lamp will remain lit for a while even if the battery pack is removed and the power cord is unplugged after charging the battery pack. This is normal.
- If the POWER lamp does not light, set the selector to the center position and disconnect the power cord. After about one minute, reconnect the power cord and set the selector to CHARGE again.
- You cannot operate the camcorder using the AC power adaptor while charging the battery pack.

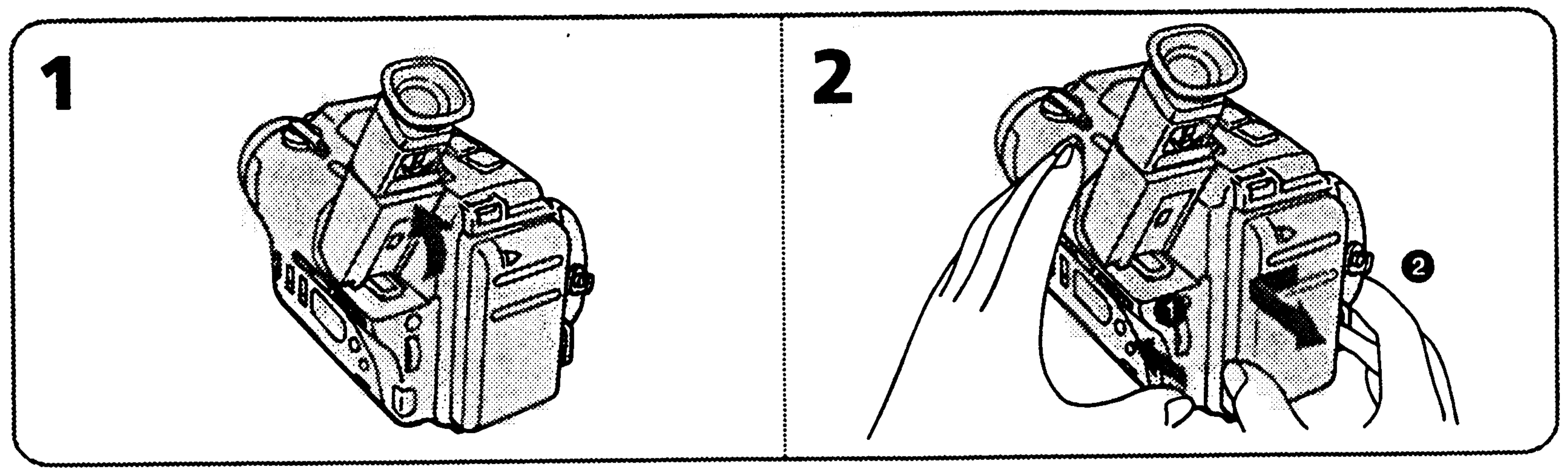
Installing the Battery Pack

(1) Lift up the viewfinder.
(2) Align the right side of the battery pack with the white line on the camcorder, and slide the battery pack to the right.



Removing the Battery Pack

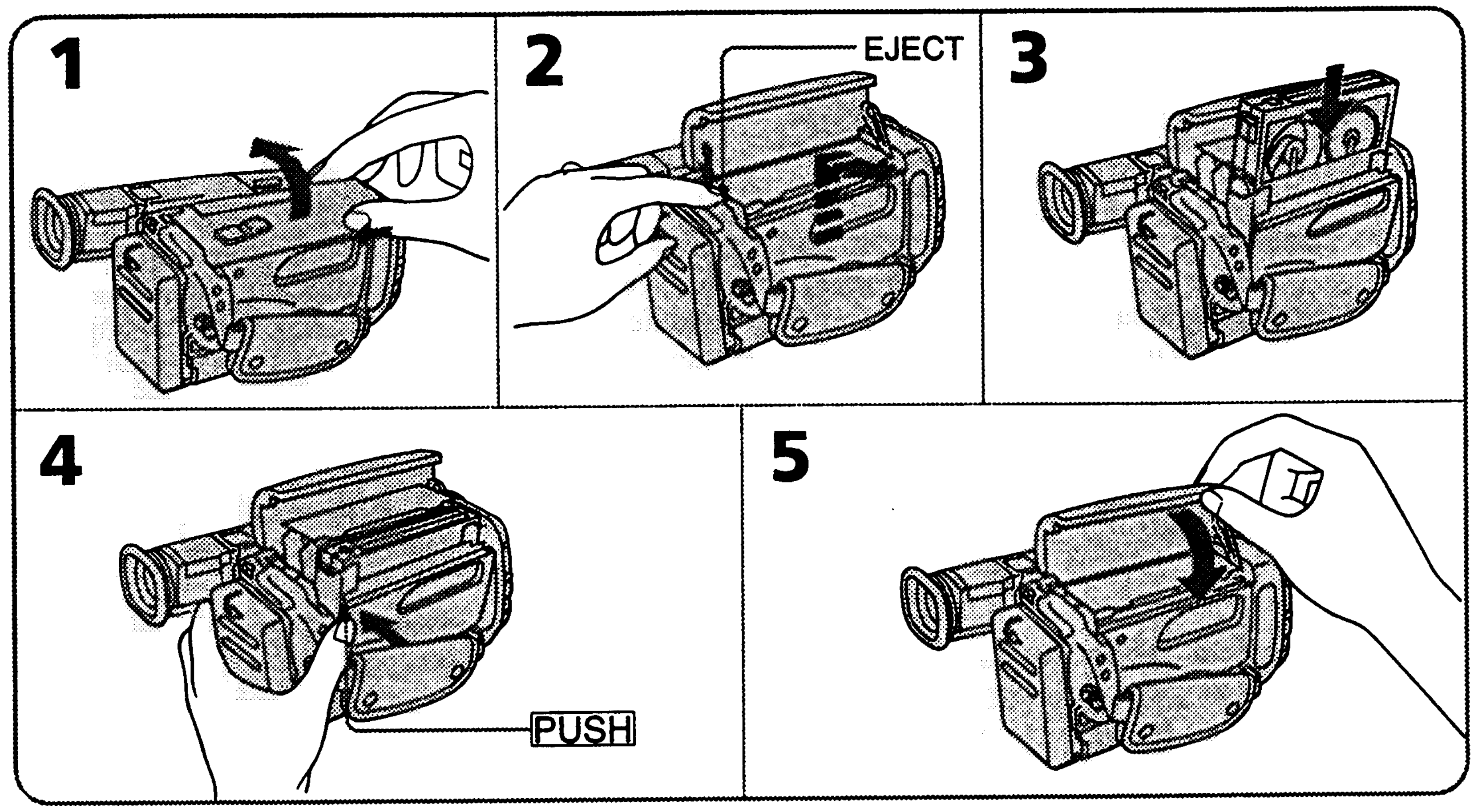
(1) Lift up the viewfinder.
(2) While pressing BATT, slide the battery pack to the left.



Inserting a Cassette

Make sure that the power source is installed.

(1) While sliding the release knob in the direction of the arrow, lift up the lid.
(2) Press EJECT. The cassette compartment automatically lifts up and opens.
(3) Insert a cassette with the window facing out.
(4) Close the cassette compartment by pressing the "PUSH" mark on the cassette compartment. The cassette compartment automatically goes down.
(5) Close the lid.

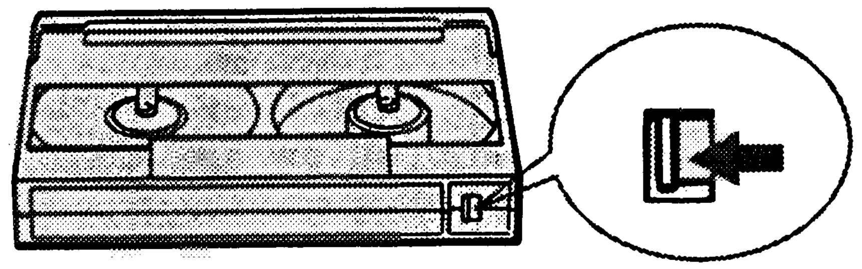


To Eject the Cassette

While sliding the release knob in the direction of the arrow, lift up the lid of the cassette holder and press EJECT.

To Prevent Accidental Erasure

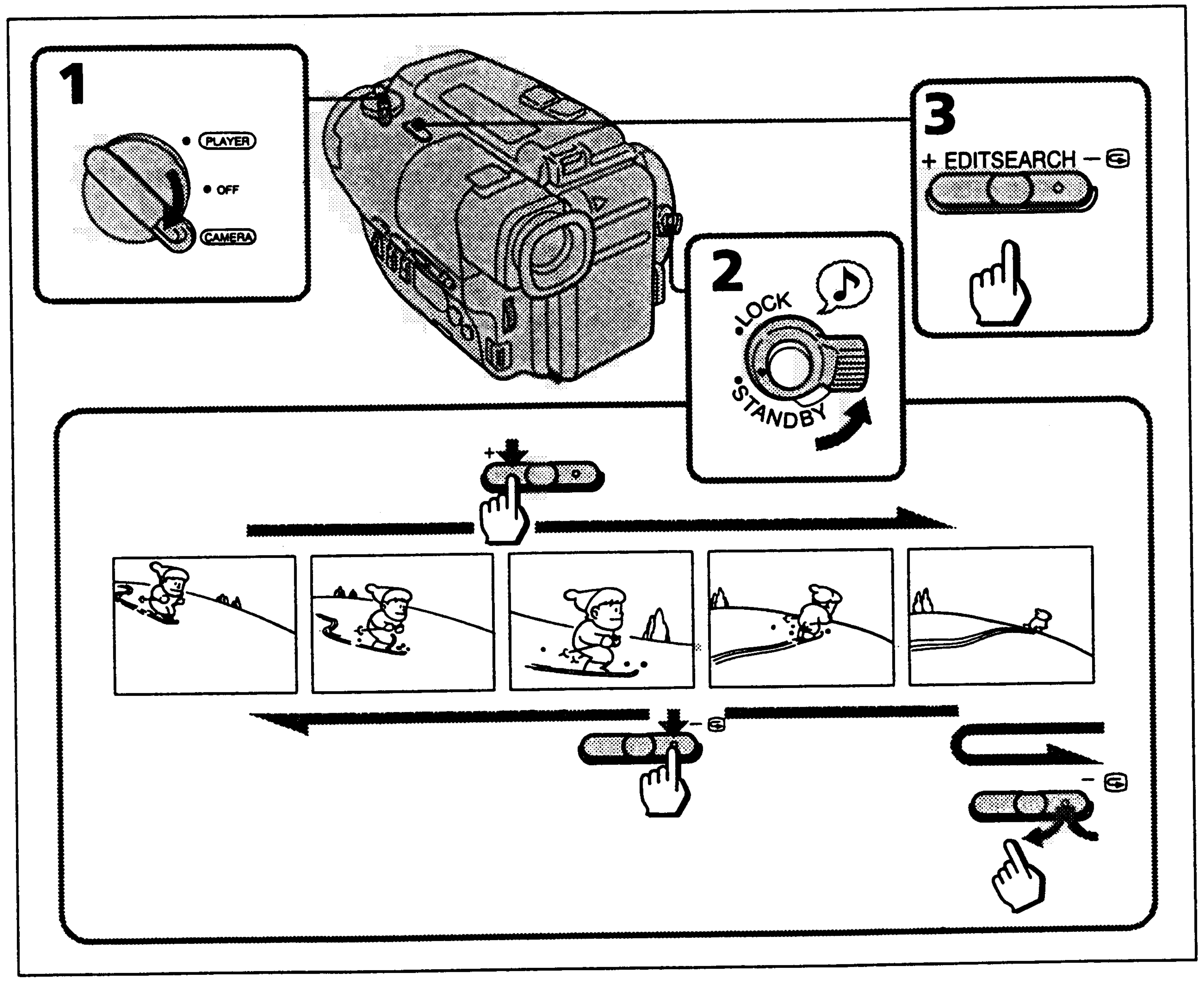
Slide the tab on the cassette to expose the red mark. If you try to record with the red mark exposed, the 📼 and ⏏ indicators flash in the viewfinder, and you cannot record.
To re-record on this tape, slide the tab back out covering the red mark.



Checking the Recorded Picture

Using EDITSEARCH, you can review the last recorded scene or check the recorded picture in the viewfinder.

(1) While pressing the small green button on the POWER switch, turn it to CAMERA.
(2) Turn STANDBY up.
(3) Press the – (⊜) side of EDITSEARCH momentarily; the last few seconds of the recorded portion plays back (**Rec Review**).
Hold down the – side of EDITSEARCH until the camcorder goes back to the scene you want. The last recorded portion is played back. To go forward, hold down the + side (**Edit Search**).



To Stop Playback

Release EDITSEARCH.

To Begin Re-recording

Press START/STOP. Re-recording begins from the point you released EDITSEARCH. Provided you do not eject the tape, the transition between the last scene you recorded and the next scene you record will be smooth.

To Monitor the Sound While Viewing the Playback Picture in the Viewfinder

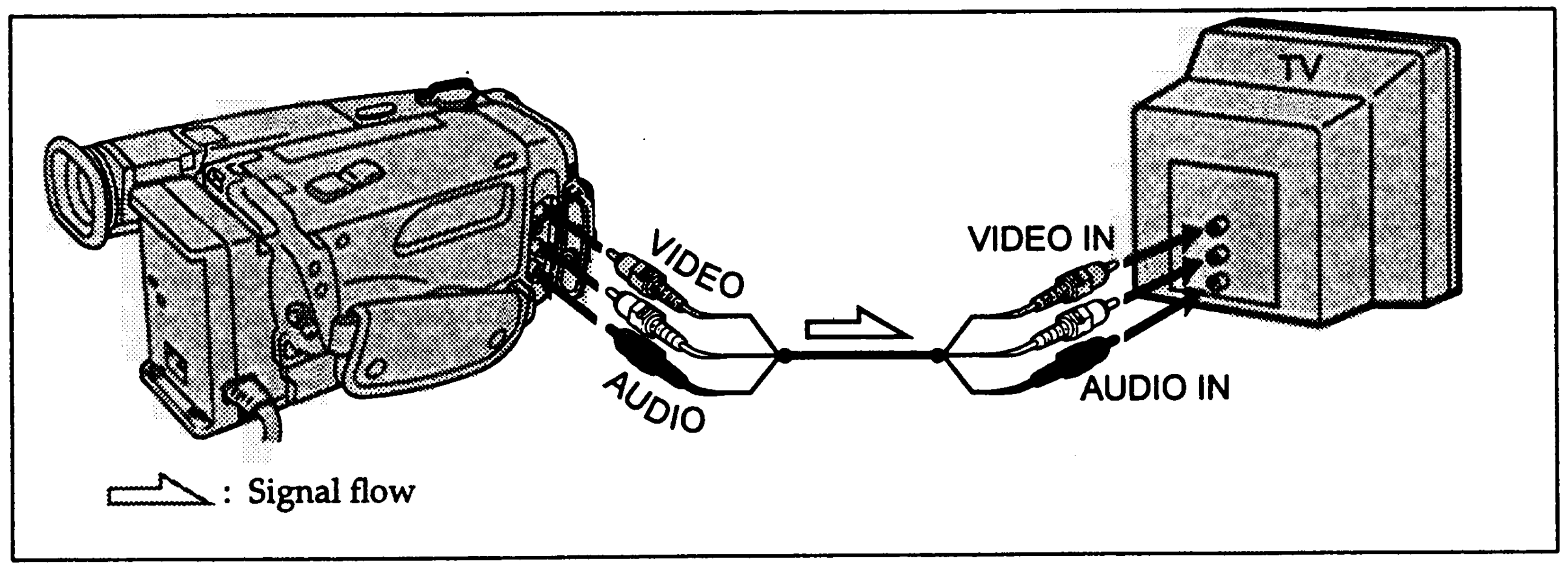
Connect headphones (not supplied) to the ∩ jack. Play back the tape in PLAYER mode (p. 16).

Connections for Playback

You can use this camcorder as a VCR by connecting it directly to your TV for playback. There are some ways to connect the camcorder to your TV. When monitoring the playback picture by connecting the camcorder to your TV, we recommend you to use house current for the power source (p. 18).

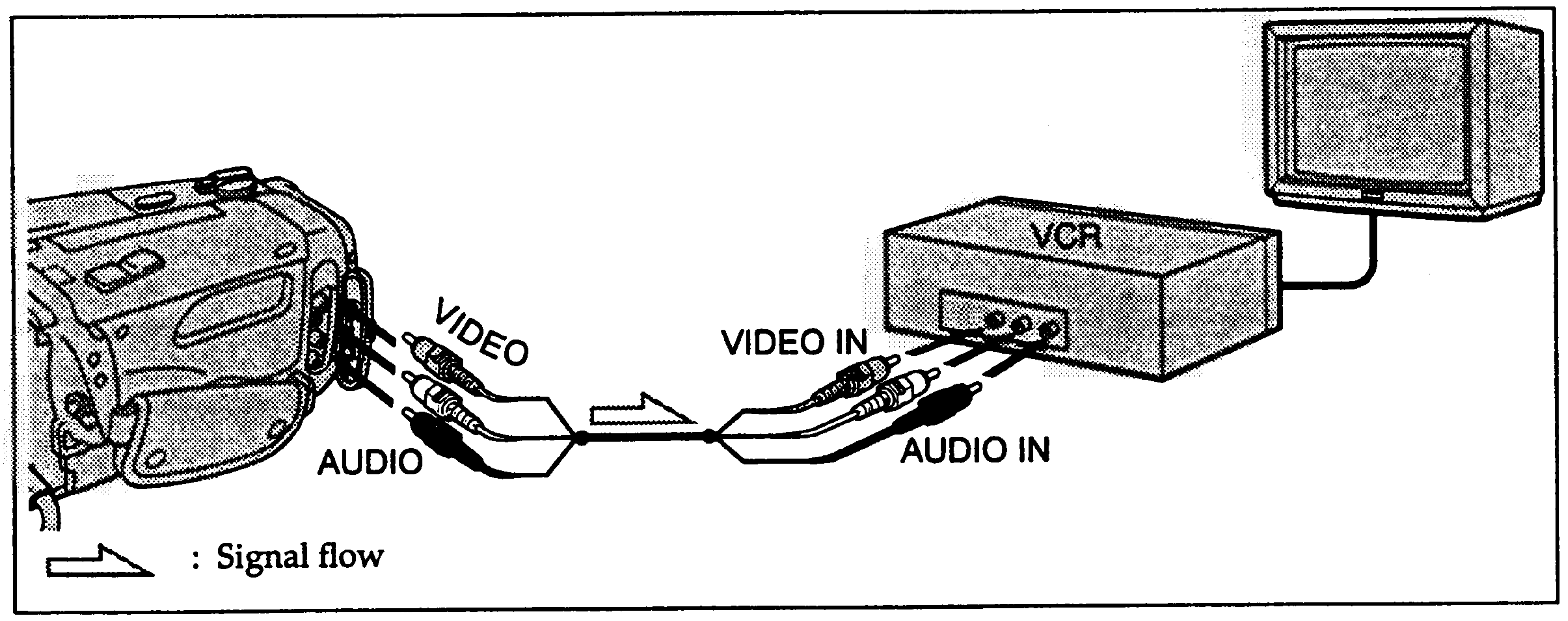
To Connect to a TV with Video/Audio Input Jacks

Connect the camcorder to the inputs on the TV by using the supplied A/V connecting cable. Set the TV/VCR selector on the TV to VCR.



If a VCR is already connected to your TV

Connect the camcorder to the LINE IN inputs on the VCR by using the supplied A/V connecting cable. Set the input selector on the VCR to LINE. Set the TV/VCR selector on the TV to VCR.



If your TV or VCR is a monaural type

Connect only the white plug for audio on both the camcorder and the TV or the VCR. With this connection, the sound is monaural.

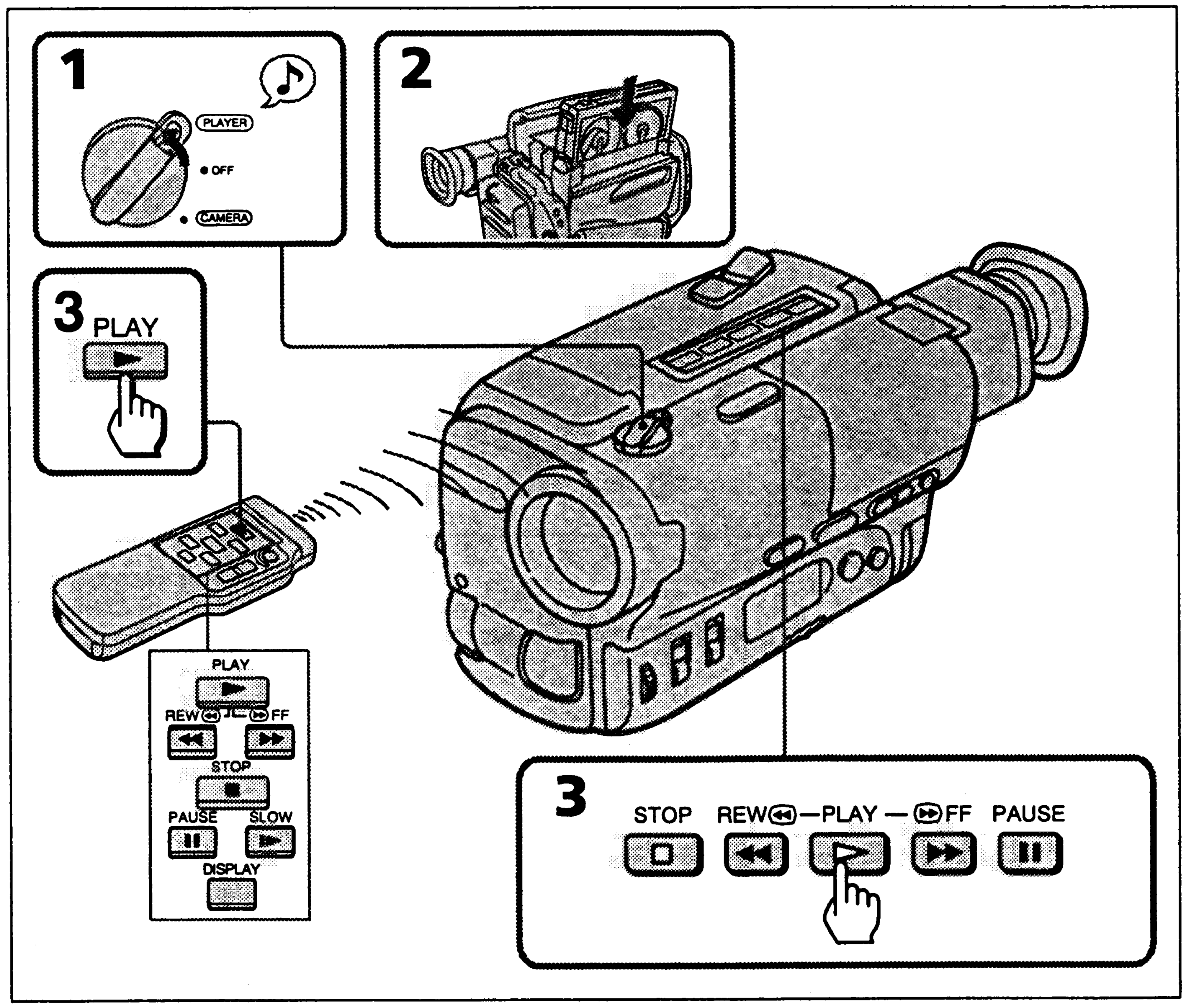
To connect a TV or a VTR without Video/Audio input jacks

Use the RFU-95UC RFU adaptor (not supplied).

Playing Back a Tape

You can monitor the playback picture in the viewfinder. You can also monitor the picture on a TV screen, after connecting the camcorder to a TV or VCR (p. 15). You can use the supplied Remote Commander to control playback.

(1) While pressing the small green button on the POWER switch, turn it to PLAYER. The tape transport buttons light up.
(2) Insert the recorded tape with the window facing out.
(3) Press ▷. Playback starts.



To stop playback, press □.
To rewind the tape, press ◀◀.
To advance the tape rapidly, press ▶▶.

Various Playback Modes

To view a still picture (Playback pause)
Press II during playback. To resume playback, press II or ▷.

To locate a scene (Picture search)
Keep pressing ◀◀ or ▶▶ during playback. To resume normal playback, release the button.

To monitor the high-speed picture while advancing the tape or rewinding (Skip scan)
Keep pressing ◀◀ while rewinding or ▶▶ while advancing the tape. To resume normal playback, press ▷ .

To view the picture in a sequence of stop-motion images
Press EDITSEARCH in playback pause mode. If you keep pressing EDITSEARCH, you can view the picture play back in the forward (+) or reverse (–) direction.

To view the picture at 1/5 speed (Slow playback) (only with the Remote Commander)
Press I▶ on the Remote Commander during playback. To resume normal playback, press ▶. If slow playback lasts for about 1 minute, it shifts to normal speed automatically.

Notes on playback
- Streaks appear and the sound is muted in the various playback modes.
- When playback pause mode lasts for 5 minutes, the camcorder automatically enters stop mode.

To display the viewfinder screen indicators on the TV
Press DISPLAY on the Remote Commander. To erase the indicators, press DISPLAY again.

To select the playback sound
Change the "HiFi SND" mode setting in the menu system (p. 29).

Using Alternative Power Sources

You can choose any of the following power sources for your camcorder: battery pack (p. 6), house current, and 12/24 V car battery. Choose the appropriate power source depending on where you want to use your camcorder.

Place	Power source	Accessory to be used
Indoors	House current	AC power adaptor AC-V25A/V25B/V25C (supplied), AC-S10, AC-V55
Outdoors	Battery pack	Battery pack NP-55 (supplied), NP-80/80D, NP-77H, NP-68, NP-66H, NP-C65, NP-60D
In the car	12 V or 24 V car battery	DC pack DCP-77

Note on power sources

Disconnecting the power source or removing the battery pack during recording or playback may damage the inserted tape. If this happens, restore the power supply again immediately.

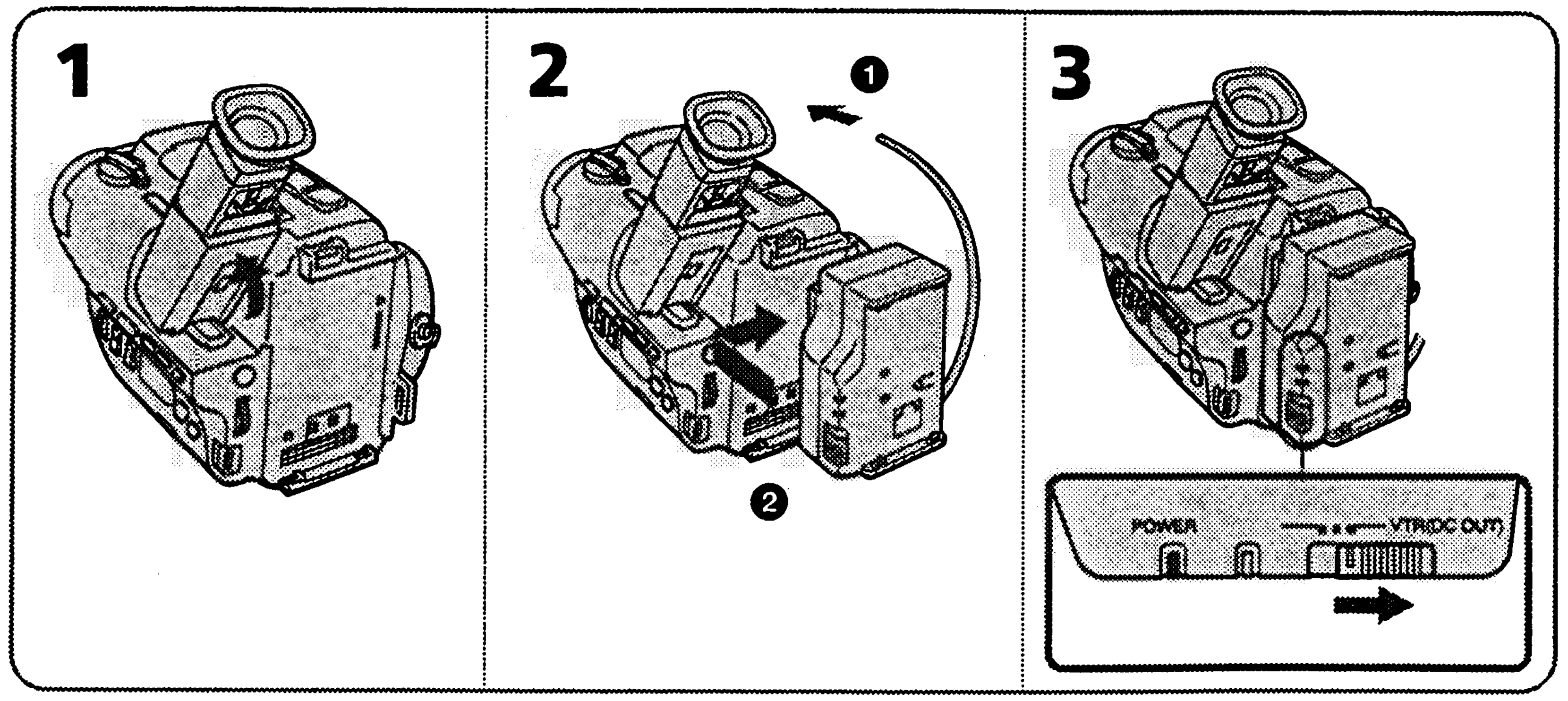
Using House Current

To use the supplied AC power adaptor:

(1) Lift up the viewfinder.

(2) Connect the AC power cord to a wall outlet. Connect the bottom of the AC power adaptor to the battery mounting surface of the camcorder.

(3) Set the selector to VTR (DC OUT).



WARNING

The power cord must only be changed at qualified service shop.

PRECAUTION

The set is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet, even if the set itself has been turned off.

Notes on the POWER lamp

- The POWER lamp will remain lit for a while even if the unit is unplugged after use. This is normal.
- If the POWER lamp does not light, set the selector to the center position and disconnect the power cord. After about one minute, reconnect the power cord and set the selector to VTR (DC OUT) again.

To remove the adaptor

The adaptor is removed in the same way as the battery pack (p. 8).

Using a Car Battery

Use the DCP-77 DC pack (not supplied). Connect the cord of the DC pack to the cigarette lighter socket of the car (12 V or 24 V). Connect the DC pack to the battery mounting surface of the camcorder.

To remove the DC pack

The DC pack is removed in the same way as the battery pack (p. 8).

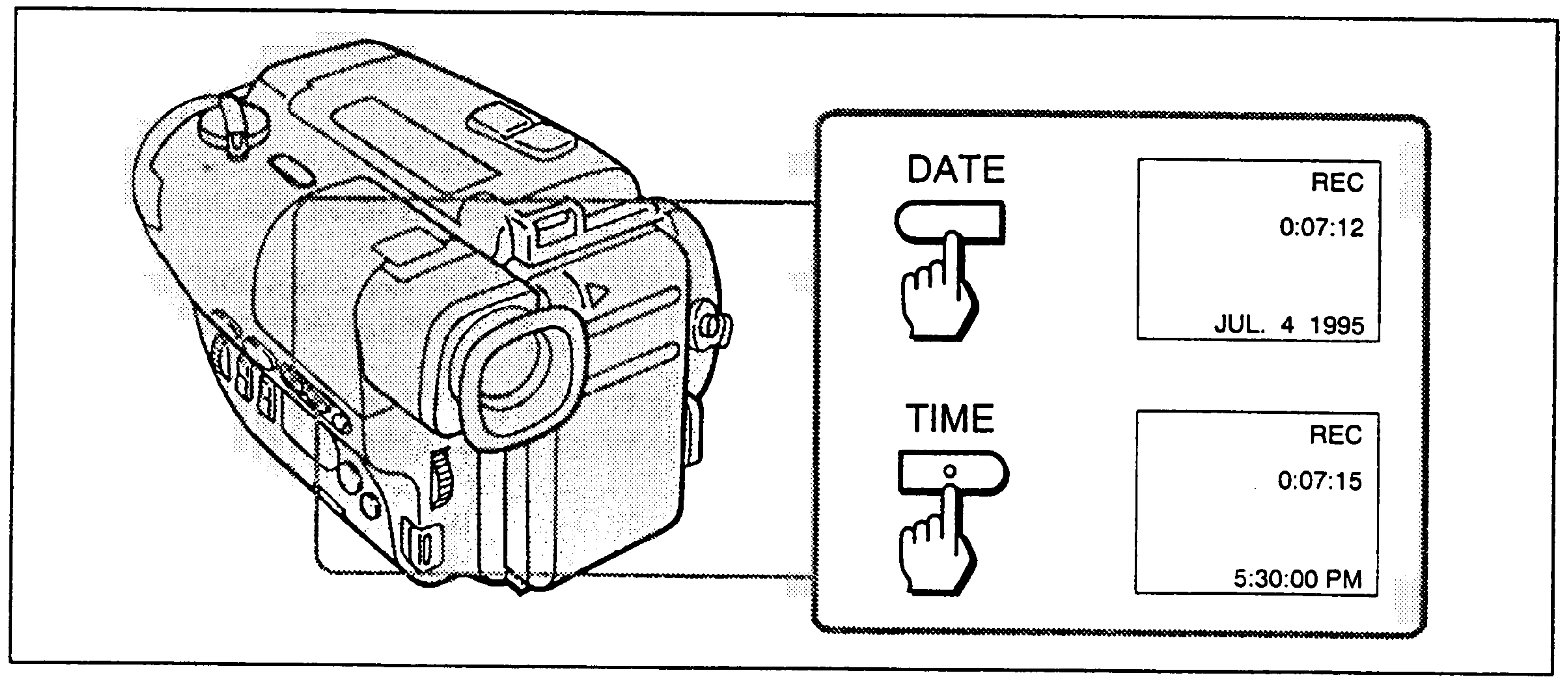
Options for Charging the Battery Pack

- AC-S10 AC power adaptor:
  You can charge a battery pack whether it is used up or not with this adaptor because it has a discharging function.
- BC-S10 portable battery charger (ideal for travel):
  You can charge a battery pack on 100 – 240 V AC current.

This mark indicates that this product is a genuine product related to our 8 mm video equipment.
We recommend that you purchase related 8 mm video products provided with the same mark or products provided with our logotype mark.

Recording with the Date or Time

Before you start recording, press DATE or TIME. You can record the date or time displayed in the viewfinder with the picture. You cannot record the date and time at the same time. Except for the date or time indicator, no indicator in the viewfinder is recorded.
The clock is set to the East Coast Standard Time at the factory, but you can reset the clock in the menu system (p. 32).



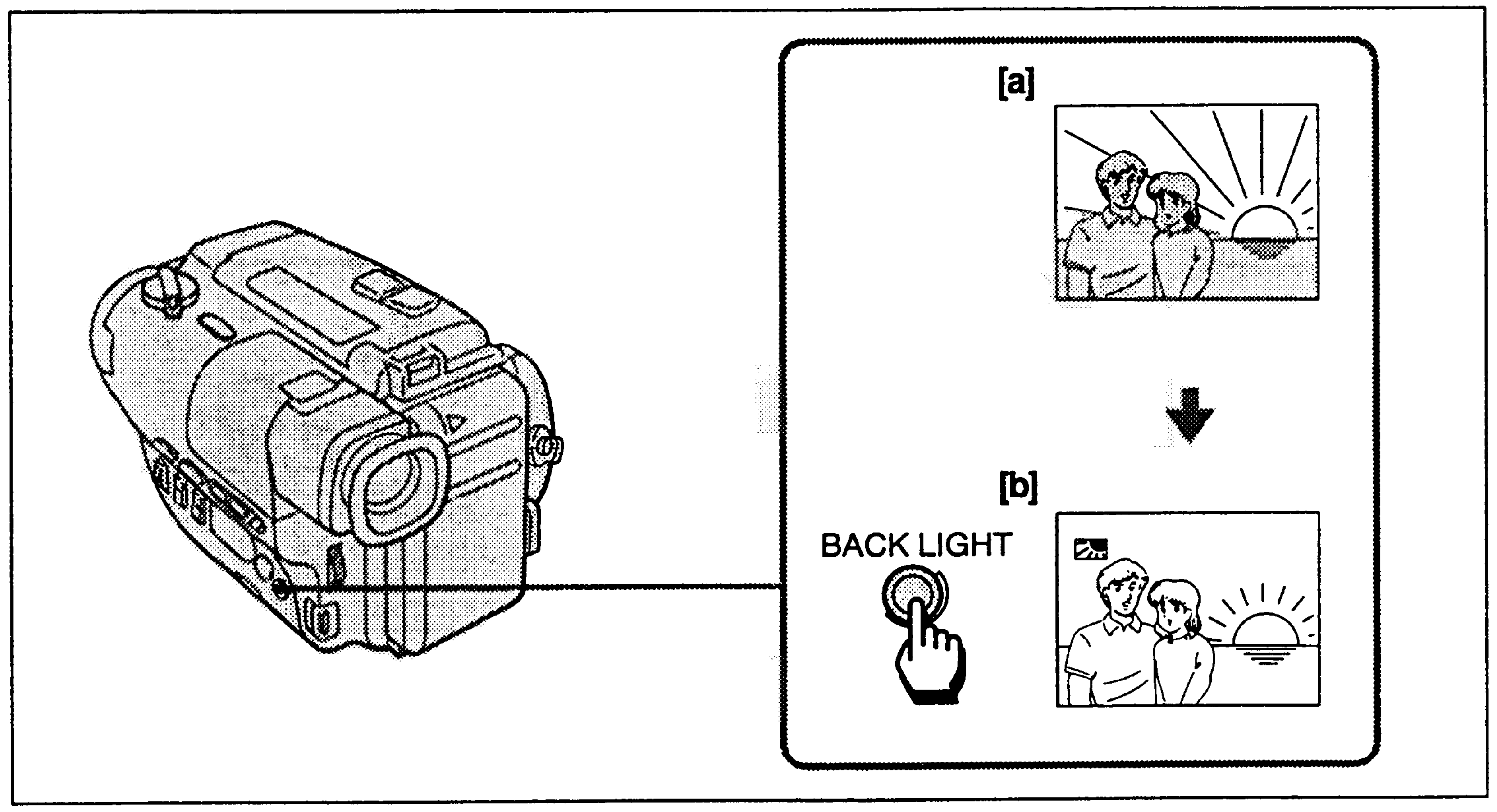
To Stop Recording with the Date or Time

Press DATE or TIME again. The date or time indicator disappears. The recording continues.

Shooting with Backlighting

When you shoot a subject with the light source behind the subject or a subject with a light background, use the BACK LIGHT function.

Press BACK LIGHT. The ▣ indicator appears in the viewfinder.



[a] Subject is too dark because of backlight.
[b] Subject becomes bright with backlight compensation.

After Shooting

Be sure to release this adjustment condition by pressing BACK LIGHT again. The ▣ indicator in the viewfinder disappears. Otherwise, the picture will be too bright under normal lighting condition.

This function is also effective under the following conditions:

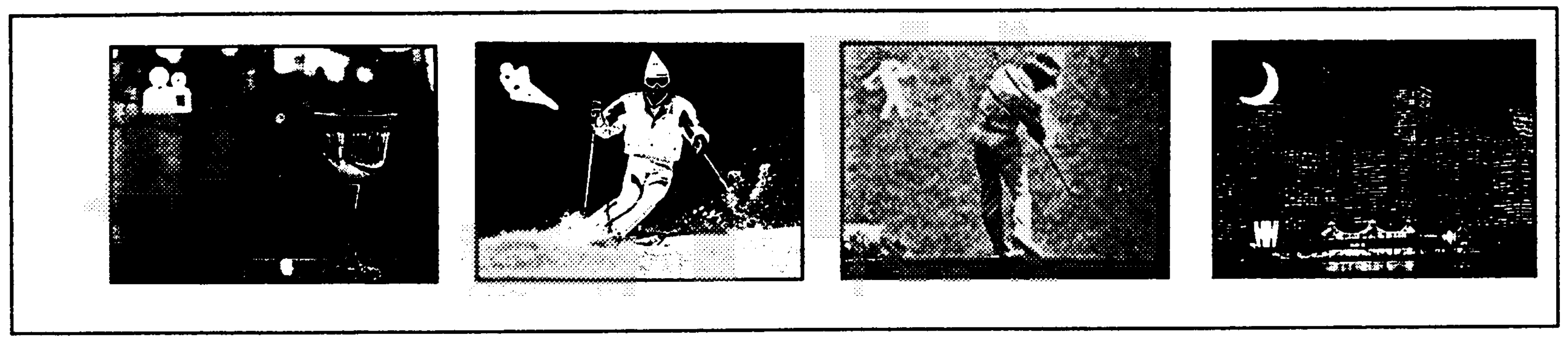
- On snow, e.g. at a ski resort
- At the beach under strong sunshine
- A subject with a light source nearby or a mirror reflecting light
- A white subject against a white background. Especially when you shoot a person wearing shiny clothes made of silk or synthetic fiber, his or her face tends to become dark if you do not use this function.

Using the PROGRAM AE Function

You can select from four PROGRAM AE (Auto Exposure) modes to suit your shooting situation. When you use PROGRAM AE, you can get a Portrait effect (the subject is in focus and the background is out of focus), capture high-speed action, or record night views.

Selecting the Best Mode

Select one of four modes, referring to the following.



Portrait mode

- A still subject such as a person or a flower
- Zooming in on a subject in the telephoto mode
- A subject behind an obstacle such as a net

Sports mode

- Outdoor sports scenes such as football, tennis, golf or skiing
- A landscape from a moving car

High-speed shutter mode

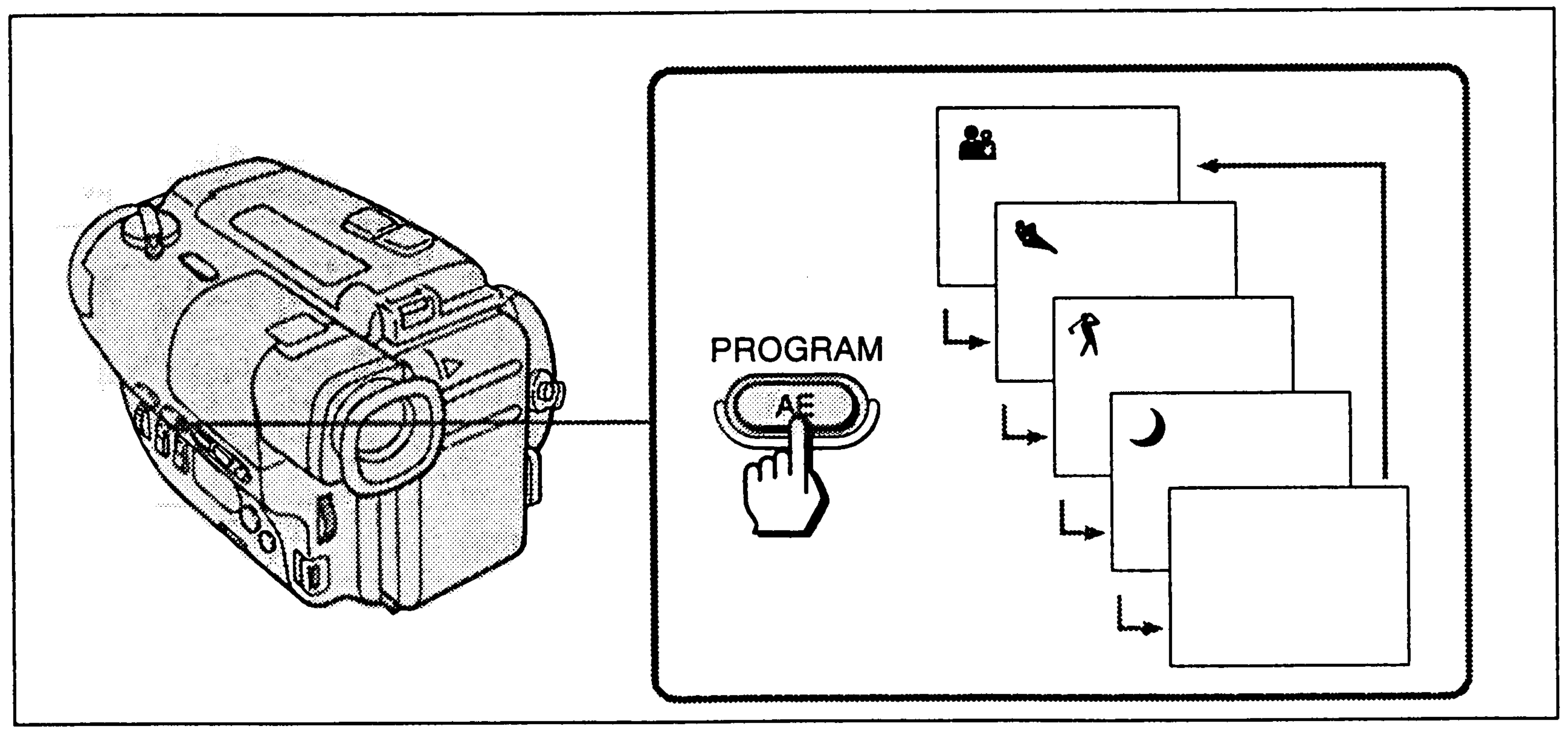
- A golf swing or a tennis match in fine weather with the ball captured clearly
- Playing back certain scenes with high-speed movements in a clear, sharp picture

Twilight mode

- Recording night views, neon signs or fireworks

Using the PROGRAM AE Function

Press PROGRAM AE. The indicator of the selected PROGRAM AE mode appears in the viewfinder.



Note on shutter speed
The shutter speed in each PROGRAM AE mode is as follows:
Portrait mode — between 1/60 to 1/2000
Sports mode — between 1/60 to 1/500
High-speed shutter mode — 1/4000
Twilight mode — 1/60
Normal mode — 1/60

Fade-in and Fade-out

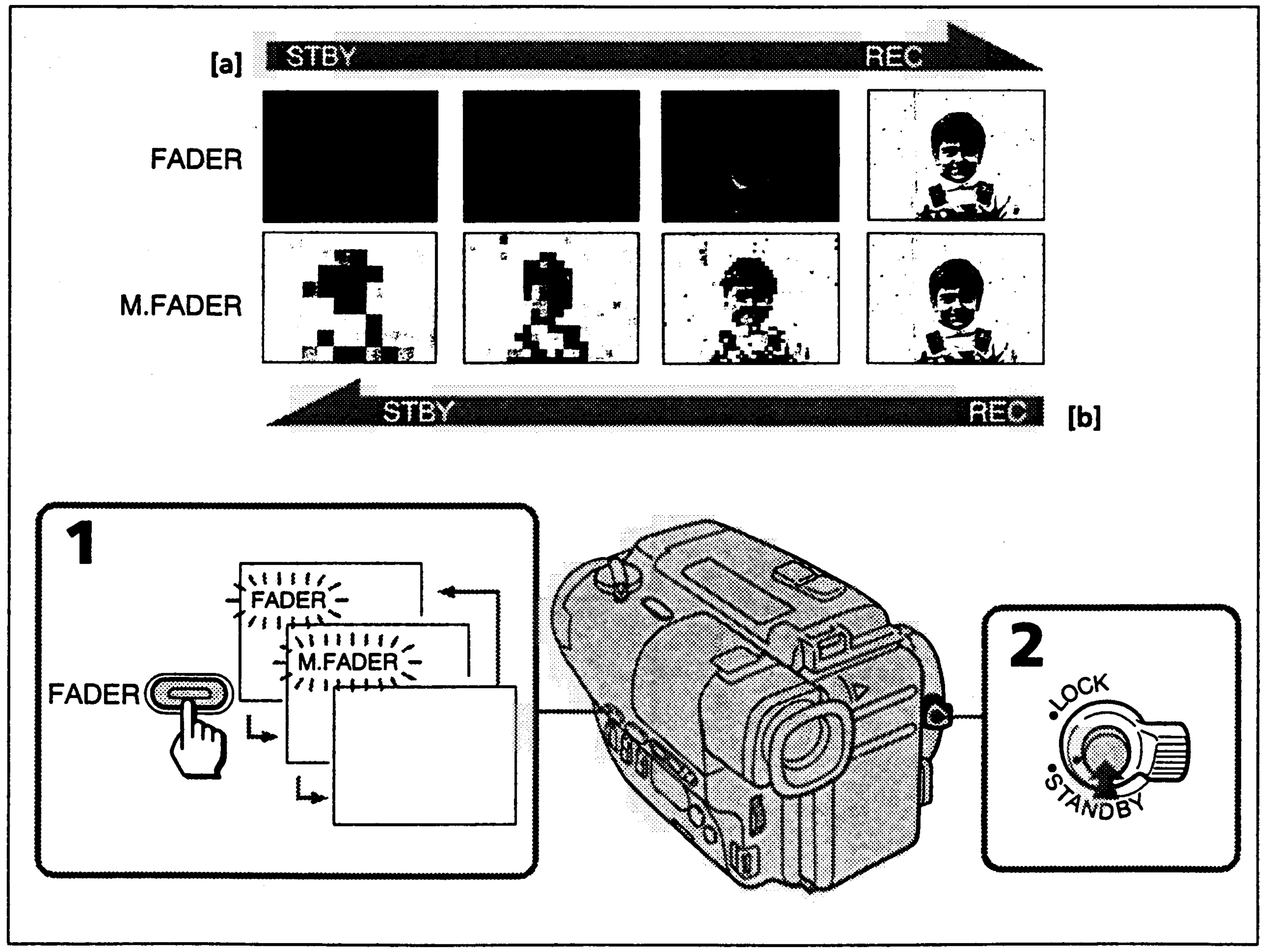
You can fade in or out to give your recording a professional appearance.
When fading in, the picture gradually fades in from black or mosaic while the sound increases. When fading out, the picture gradually fades to black or mosaic while the sound decreases.

When Fading in [a]

(1) While the camcorder is in Standby mode, press FADER. The fade indicator starts flashing.
(2) Press START/STOP to start recording. The fade indicator stops flashing.

When Fading out [b]

(1) During recording, press FADER. The fade indicator starts flashing.
(2) Press START/STOP to stop recording. The fade indicator stops flashing, and then recording stops.



To Cancel the Fade-in/Fade-out Function

Before pressing START/STOP, press FADER until the fade indicator disappears.

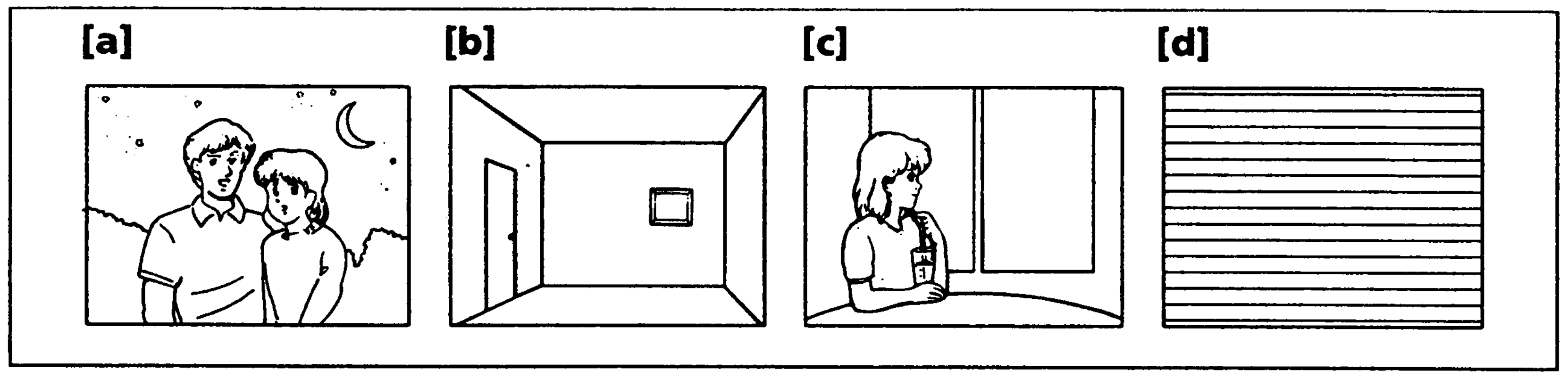
When the date or time indicator is displayed

The date or time indicator does not fade in nor fade out.

Focusing Manually

When to Use Manual Focus

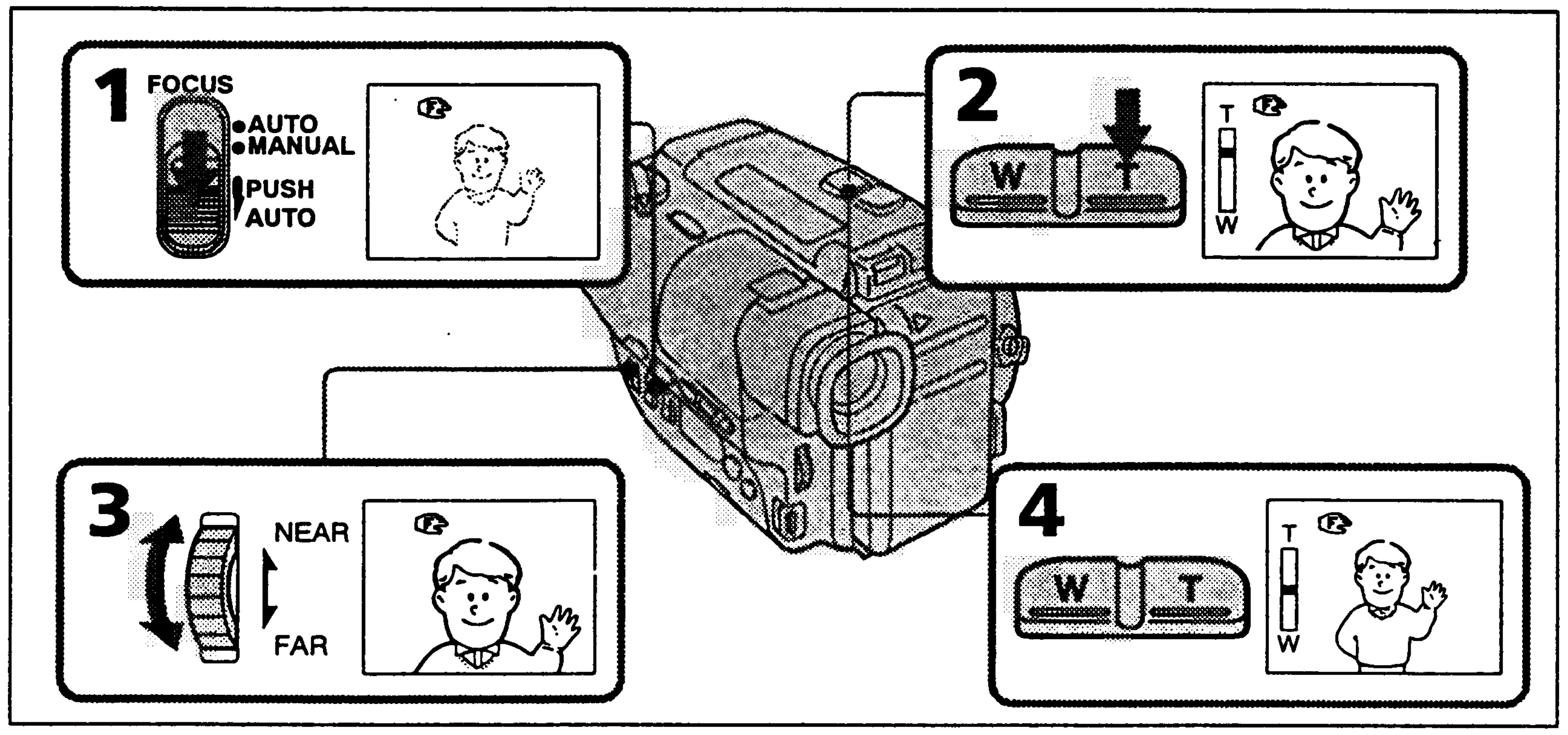
In the following cases you should obtain better results by adjusting the focus manually.



- Insufficient light **[a]**
- Subjects with little contrast — walls, sky, etc. **[b]**
- Too much brightness behind the subject **[c]**
- Horizontal stripes **[d]**
- Subjects through frosted glass
- Subjects beyond nets, etc.
- Bright subject or subject reflecting light
- Shooting a stationary subject when using a tripod

Focusing Manually

When focusing manually, first focus in telephoto before recording, and then reset the shot length.
(1) Set FOCUS to MANUAL. The Ⓕ indicator appears in the viewfinder.
(2) Keep pressing the "T" (telephoto) side of the power zoom button until the zooming stops.
(3) Turn the focus dial to achieve a sharp focus.
(4) Set the desired shot length using the power zoom button.



See the next page for further information.

Focusing Manually

To Return to Autofocus Mode
Set FOCUS to AUTO. The indicator in the viewfinder disappears.

Shooting in relatively dark places
Shoot at wide-angle after focusing in the telephoto position.

Note on the focus dial
The focus dial does not have a stop position.

To Shoot with Autofocus Momentarily
When you want to switch to autofocus momentarily while recording in manual focus mode, push FOCUS down to PUSH AUTO. Autofocus functions while FOCUS is held down. When it is released, manual focus mode will be resumed.

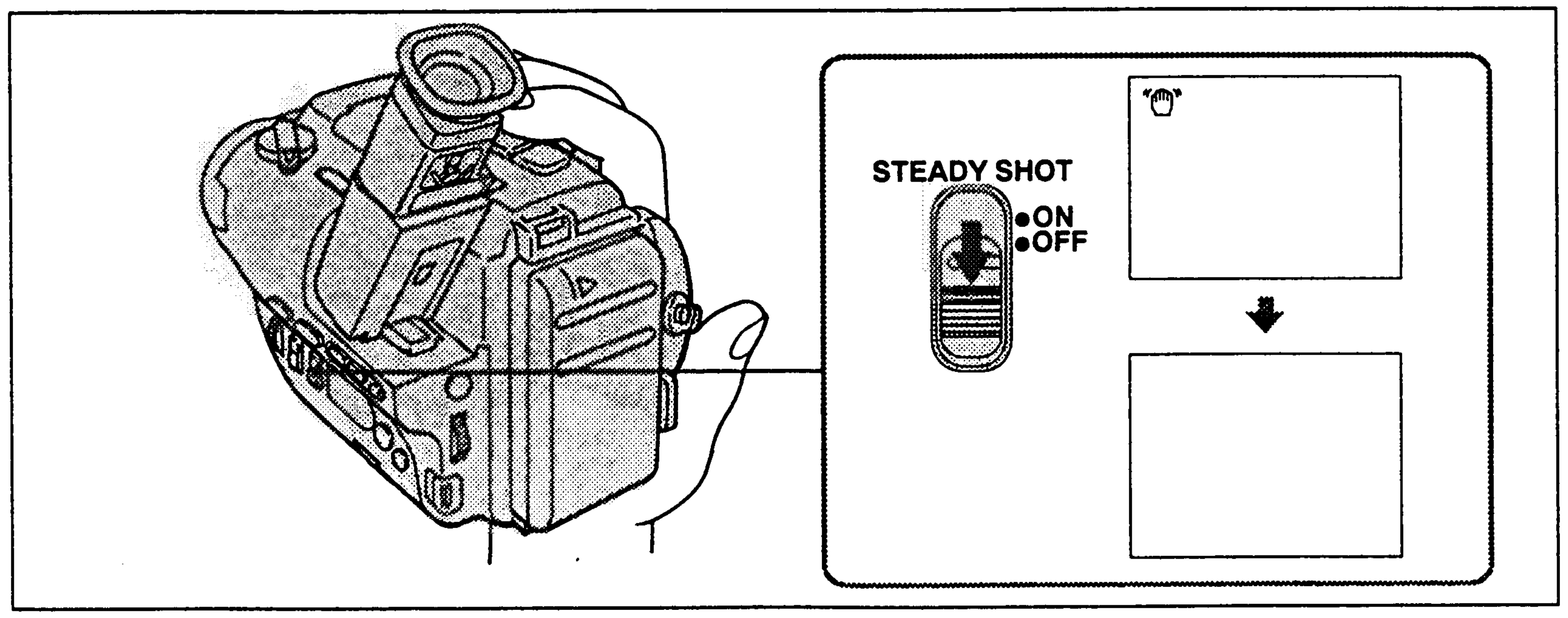
Releasing the STEADY SHOT Function

— For Models with the STEADY SHOT Switch (CCD-TR83/TR93 only)

When you shoot, the indicator appears in the viewfinder. This indicates that the Steady shot function is working and the camcorder compensates for camera-shake.

You can release the Steady shot function when you do not need to use the Steady shot function. Do not use the Steady shot function when shooting a stationary object with a tripod.

Set STEADY SHOT to OFF.



To Activate the Steady Shot Function Again
Set STEADY SHOT to ON.

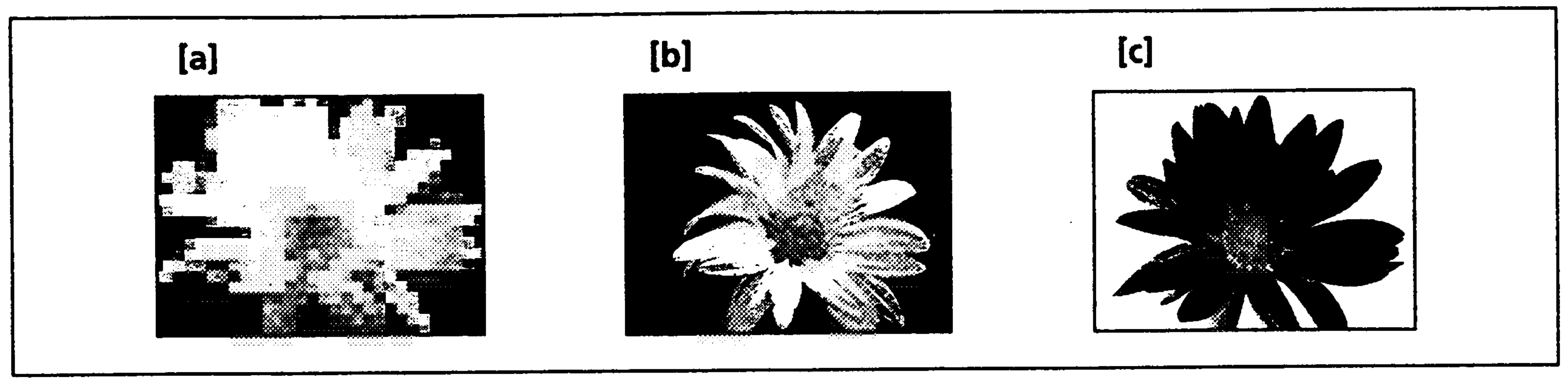
Notes on the Steady shot function
- The Steady shot function will not correct excessive camera-shake.
- When you switch the STEADY SHOT function on or off, the exposure may fluctuate.

Enjoying Picture Effect

— For Models with the PICTURE EFFECT Switch (CCD-TR36/TR76/TR83/TR93 only)

Selecting Picture Effect

You can make pictures like those of television with Picture Effect function.



MOSAIC [a]
The picture is mosaic.

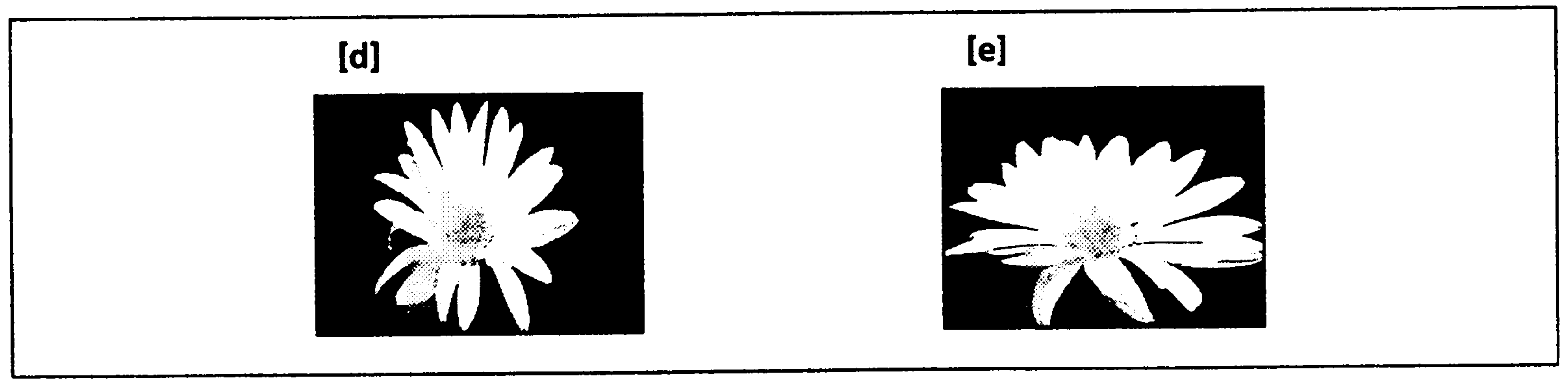
SOLARIZE [b]
The light intensity is more clear, and the picture looks like an illustration.

B&W
The picture is monochrome (black and white).

SEPIA
The picture is sepia.

NEG. ART [c]
The color of the picture is reversed.

Picture Effect Modes for CCD-TR83/TR93 only



SLIM [d]
The picture expands vertically.

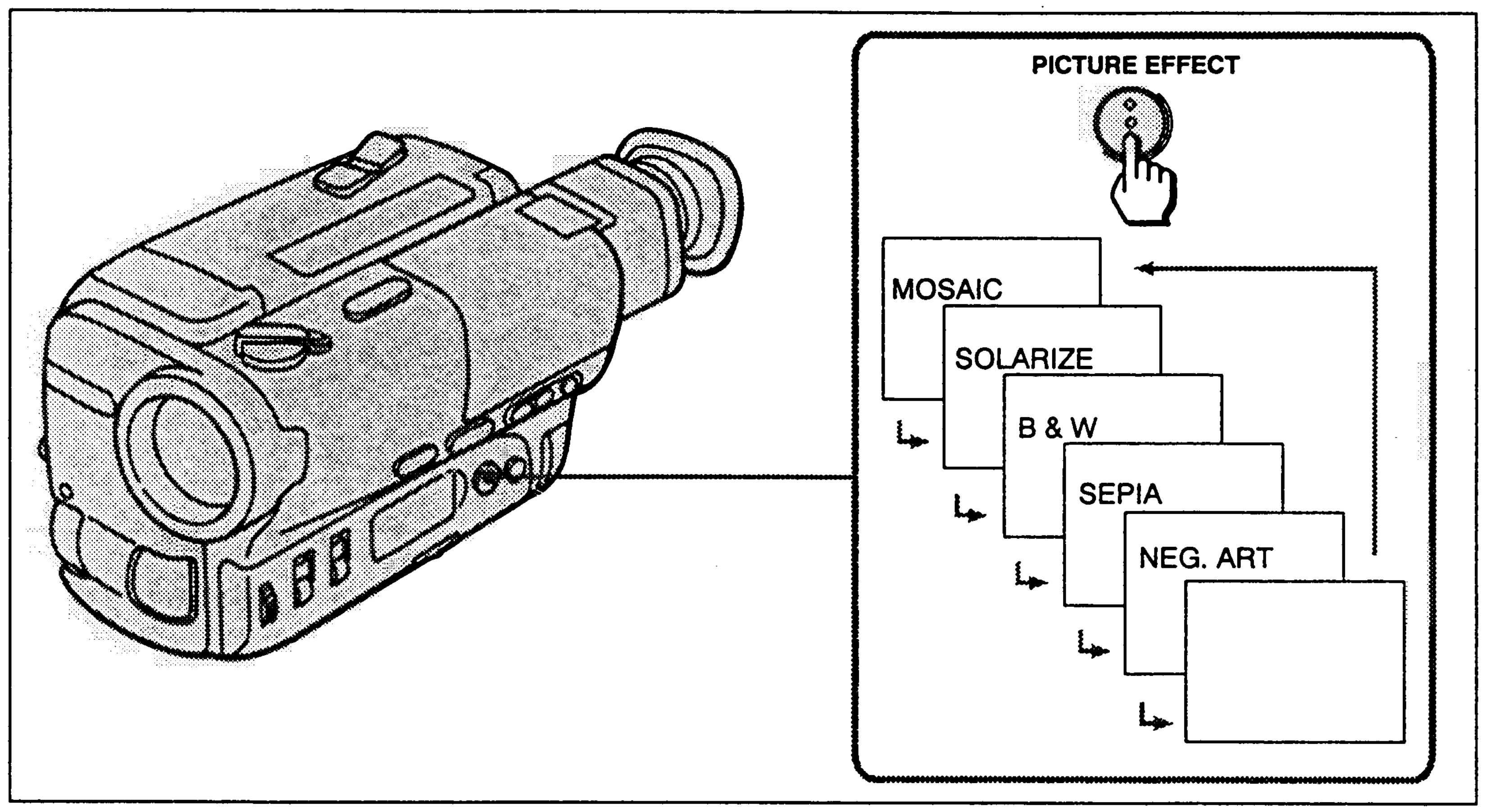
STRETCH [e]
The picture expands horizontally.

See the next page for further information.

Enjoying Picture Effect

Using Picture Effect Function

Press PICTURE EFFECT to select the desired Picture Effect mode.



Note on Picture Effect
When you turn the power off, the camcorder returns automatically to normal mode.

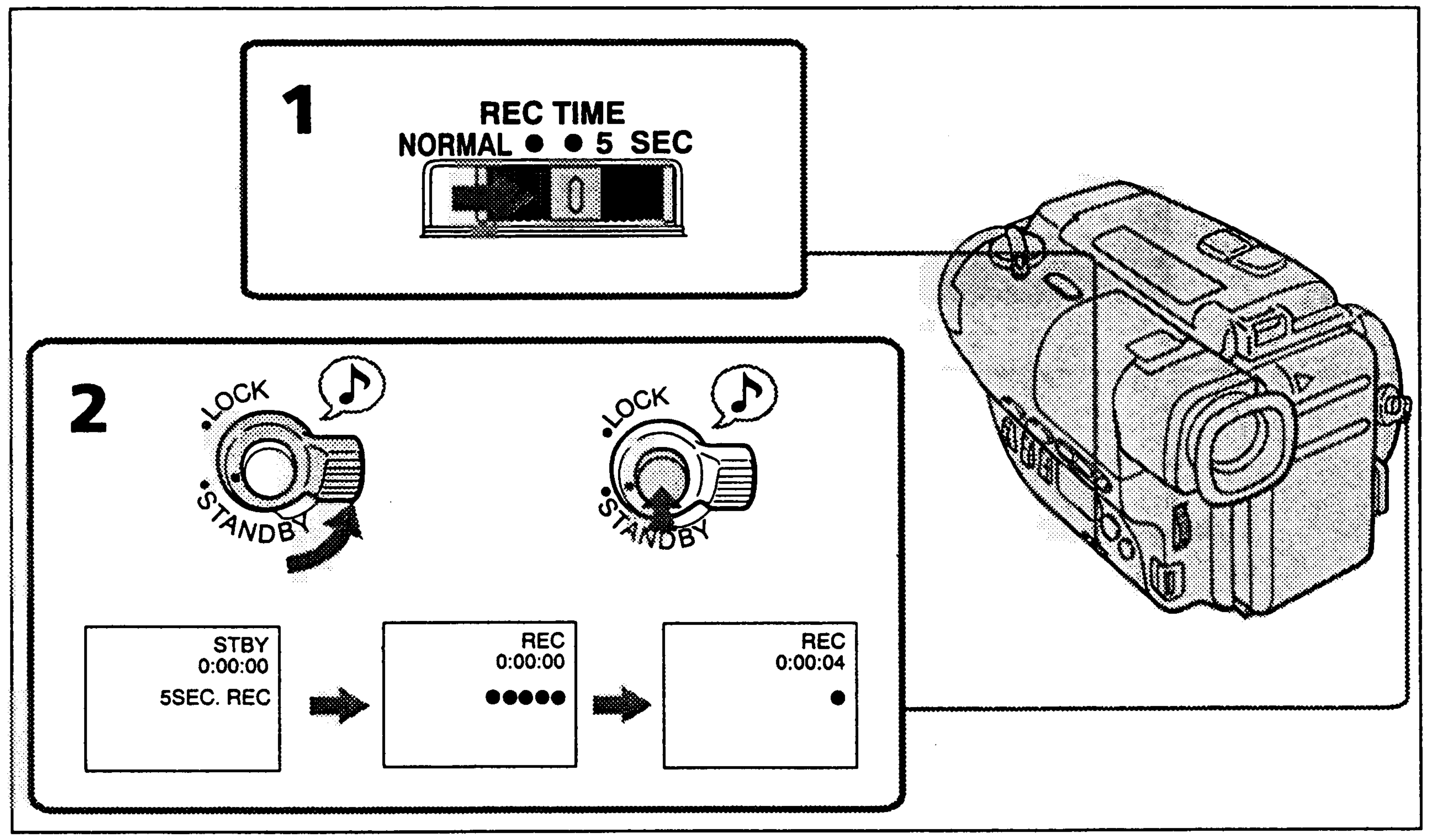
Shooting Scenery in Several Short Takes

Long, continuous shots of scenery tend to be dull, and have to be edited to make an interesting video. With the 5SEC. REC (5-second recording) mode, the camcorder records for only 5 seconds and then switches to Standby mode, so that you will automatically take a series of quick shots resulting in a lively video.

(1) Set REC TIME to 5 SEC.

(2) Turn STANDBY up and press START/STOP. Recording starts. "5SEC. REC" indicator appears in the viewfinder and changes to five dots.

The dots disappear at a rate of one per second. When five seconds elapse and all the dots disappear the camcorder switches to Standby mode automatically.



To Extend the Recording Time

Press START/STOP again before all the dots disappear. Recording continues for 5 seconds from the moment you press START/STOP.

To Cancel 5-Second Recording

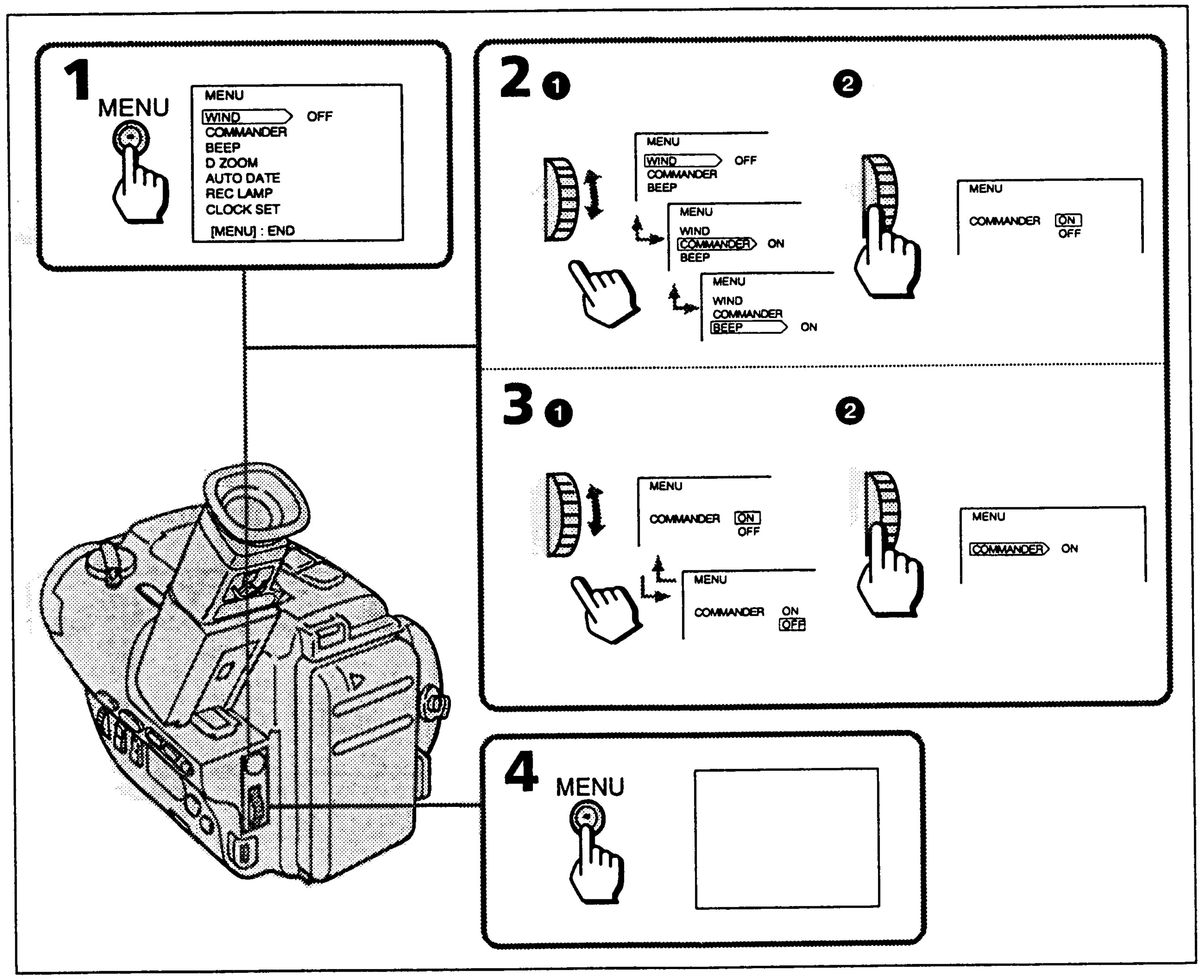
Set REC TIME to NORMAL. If you set the switch while recording, recording continues.

Note on 5-second recording
You cannot use FADER function during 5-second recording.

Changing the Mode Settings

You can change the mode settings in the menu system to further enjoy the features and functions of the camcorder.

(1) Press MENU to display the menu in the viewfinder.
(2) Turn the menu dial to select the desired item, then press the dial.
(3) Turn the menu dial to set the desired mode, then press the dial. If you want to change the other modes, repeat steps 2 and 3.
(4) Press MENU to erase the menu display.



Selecting the Mode Setting of Each Item

Items for both CAMERA and PLAYER Modes

COMMANDER <ON/OFF>
- Select ON when using the supplied Remote Commander for the camcorder.
- Select OFF when not using the Remote Commander.

BEEP <ON/OFF>
- Select ON so that beeps sound when you start/stop recording, etc.
- Select OFF when you do not want to hear the beep sound.

CLOCK SET*
Select this item to reset the date or time.

Items for CAMERA Mode Only

WIND <ON/OFF>
- Select ON to reduce wind noise when recording in strong wind.
- Normally select OFF.

D ZOOM* <ON/OFF> (CCD-TR83/TR93 only)
- Select ON to activate digital zooming.
- Select OFF to not use the digital zoom. The camcorder goes back to 12x zoom.

AUTO DATE* <ON/OFF>
- Select ON to record the date for 10 seconds after recording has started.
- Select OFF to not record the date.

REC LAMP* <ON/OFF>
- Select OFF when you do not want the camera recording/battery lamp at the front of the unit to light up.
- Normally select ON.

Items for PLAYER Mode Only

EDIT <ON/OFF>
- Select ON to minimize picture deterioration when editing.
- Normally select OFF.

HiFi SND <STEREO/1/2>
- Normally select STEREO.
- Select 1 or 2 to play back a dual sound track tape.

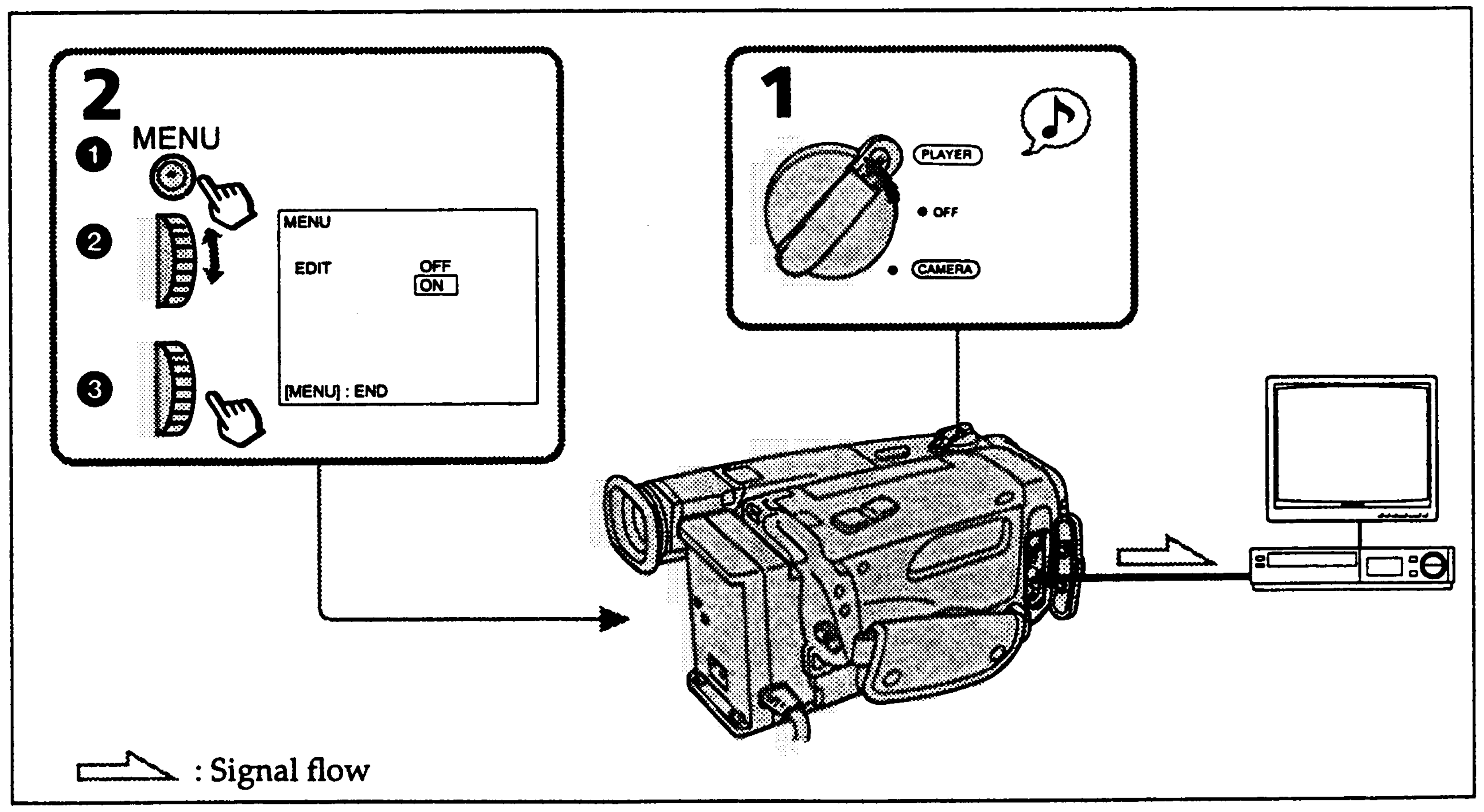
* These settings are retained even when the battery is removed, as long as the lithium battery is in place.

Editing onto Another Tape

You can create your own video program by editing with any other 8 8 mm, Hi8 Hi8, VHS VHS, SVHS S-VHS, VHSC VHSC, SVHSC S-VHSC, B Betamax or EDBeta ED Betamax VCR that has audio/video inputs.

Before Editing

Connect the camcorder to the VCR using the supplied A/V connecting cable (p. 15).
Set the input selector on the VCR to LINE, if available.
(1) While pressing the small green button on the POWER switch, turn it to PLAYER.
(2) Set EDIT to ON in the menu system.



Starting Editing

(1) Insert a blank tape (or a tape you want to record over) into the VCR, and insert your recorded tape into the camcorder.
(2) Play back the recorded tape on the camcorder until you locate the point where you want to start editing, then set the camcorder in playback pause mode.
(3) On the VCR, locate the recording start point and set the VCR in the recording pause mode.
(4) Press ❚❚ on the camcorder and VCR simultaneously to start editing.

To Edit More Scenes

Repeat steps 2 to 4.

To Stop Editing

Press □ on both the camcorder and the VCR.

Use of the EDITSEARCH button

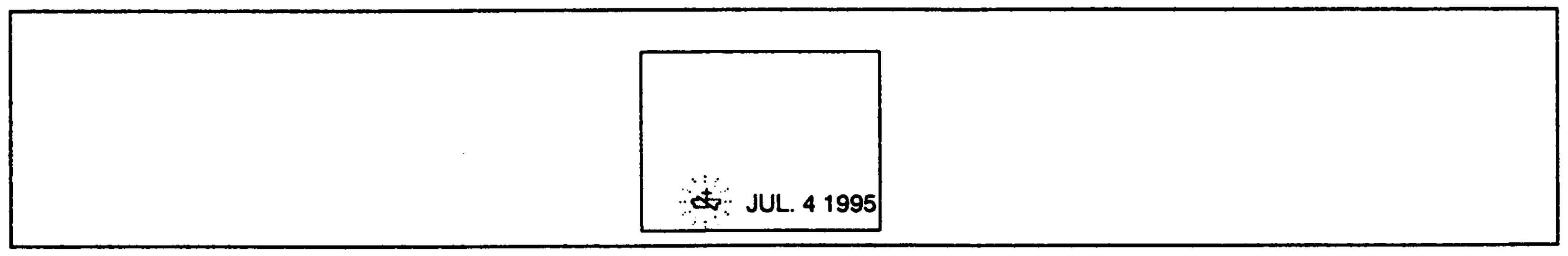
You can play back the tape in normal/reverse direction by holding down EDITSEARCH during playback pause mode. You can also play back still pictures successively at specific intervals by pressing EDITSEARCH intermittently.

Note on the DISPLAY function

If you have displayed the viewfinder screen indicators on the TV, erase the indicators by pressing DISPLAY on the Remote Commander so that they will not be superimposed on the edited tape.

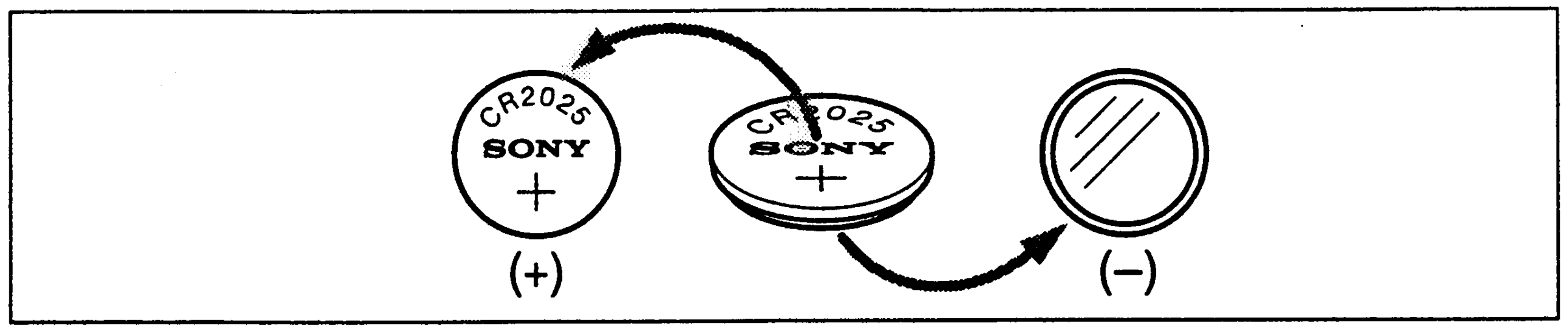
Changing the Lithium Battery

Your camcorder is supplied with a lithium battery installed. The lithium battery for the camcorder lasts for about 1 year under normal operation. When the battery becomes weak or dead, the ⌁ indicator flashes in the viewfinder for about 5 seconds when you set the POWER switch to CAMERA. In this case, **replace the battery with a Sony CR2025 or Duracell DL-2025 lithium battery. Use of any other battery may present a risk of fire or explosion.**



Note on Lithium Battery

The lithium battery has a positive (+) side and a negative (–) side as illustrated. Be sure to insert the lithium battery with the positive side facing out.

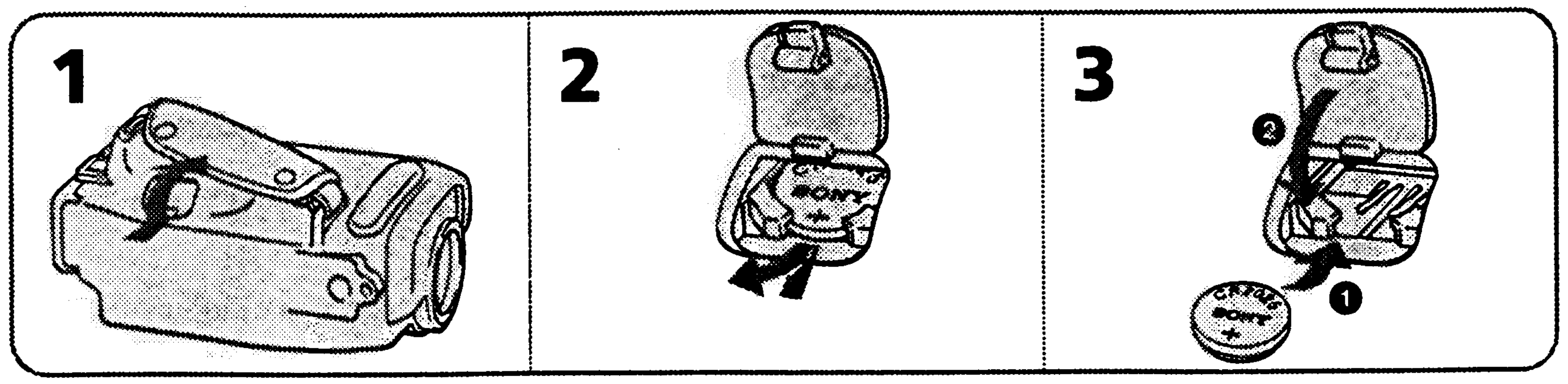


WARNING
The battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

Caution
Keep the lithium battery out of the reach of children. Should the battery be swallowed, consult a doctor immediately.

Changing the Lithium Battery

When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, you will need to reset the date, time and other items in the menu system retained by the lithium battery.
(1) Open the lid of lithium battery compartment under the grip strap of the camcorder.
(2) Push the battery down once and pull it out from the holder.
(3) Install the lithium battery with the positive (+) side facing out. Close the lid.

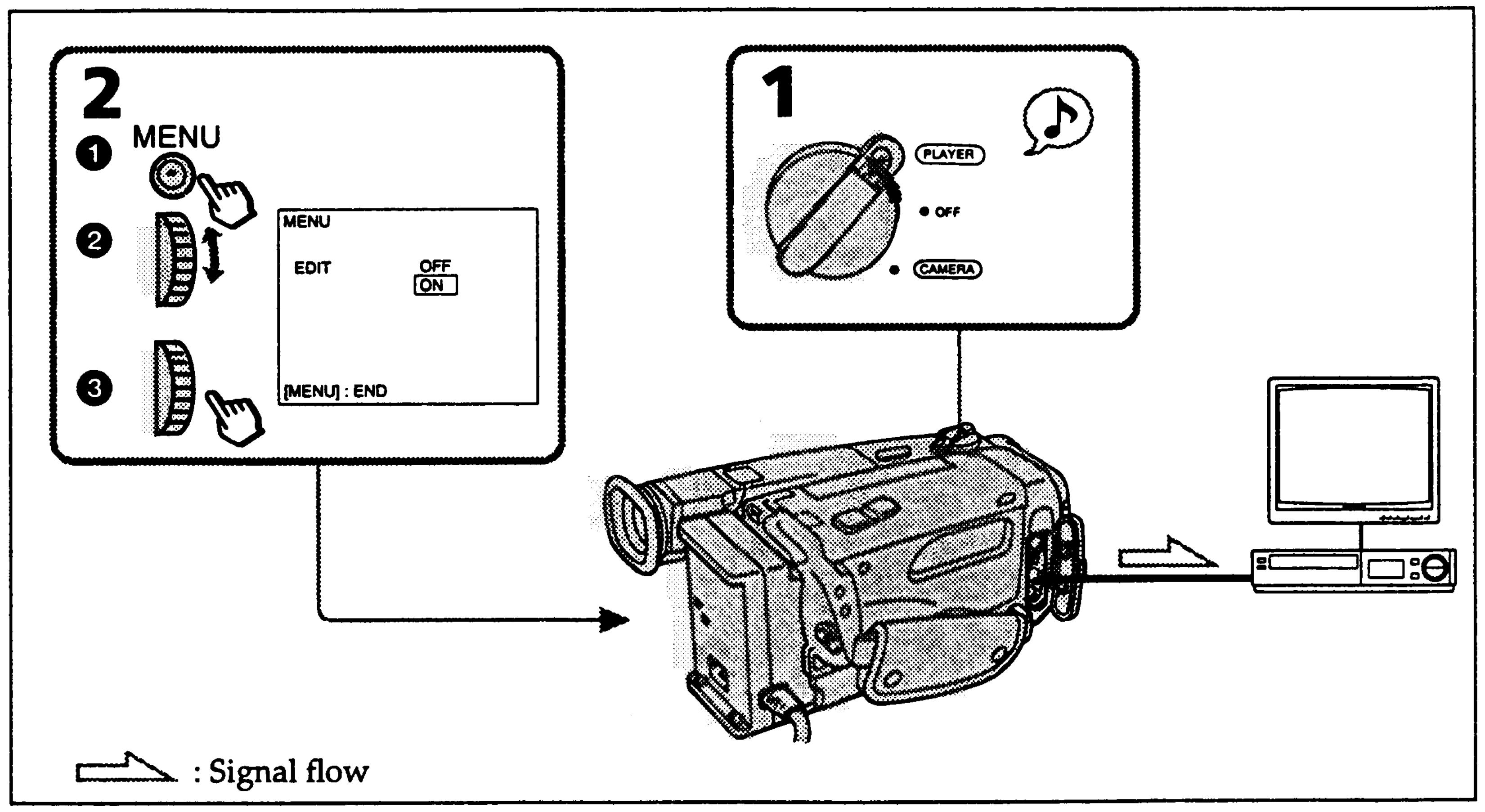


Editing onto Another Tape

You can create your own video program by editing with any other 8 8 mm, Hi8 Hi8, VHS VHS, S-VHS S-VHS, VHS-C VHSC, S-VHS-C S-VHSC, β Betamax or ED Beta ED Betamax VCR that has audio/video inputs.

Before Editing

Connect the camcorder to the VCR using the supplied A/V connecting cable (p. 15).
Set the input selector on the VCR to LINE, if available.
(1) While pressing the small green button on the POWER switch, turn it to PLAYER.
(2) Set EDIT to ON in the menu system.



: Signal flow

Starting Editing

(1) Insert a blank tape (or a tape you want to record over) into the VCR, and insert your recorded tape into the camcorder.
(2) Play back the recorded tape on the camcorder until you locate the point where you want to start editing, then set the camcorder in playback pause mode.
(3) On the VCR, locate the recording start point and set the VCR in the recording pause mode.
(4) Press II on the camcorder and VCR simultaneously to start editing.

To Edit More Scenes

Repeat steps 2 to 4.

To Stop Editing

Press □ on both the camcorder and the VCR.

Use of the EDITSEARCH button

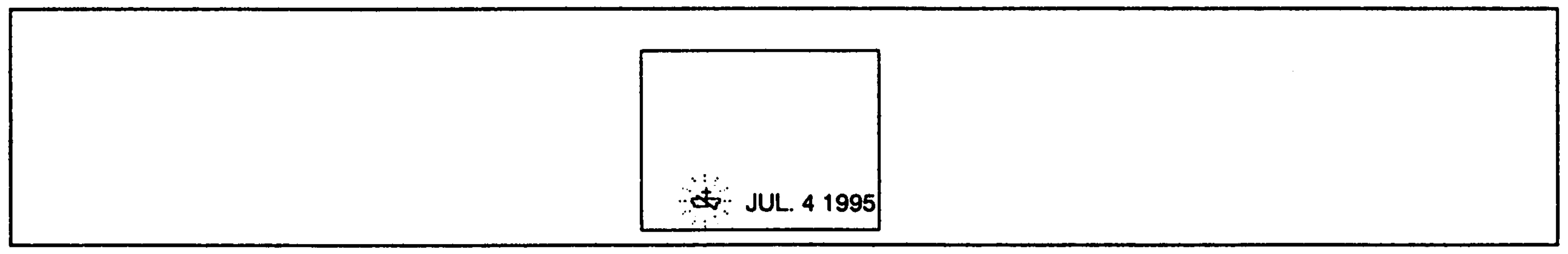
You can play back the tape in normal/reverse direction by holding down EDITSEARCH during playback pause mode. You can also play back still pictures successively at specific intervals by pressing EDITSEARCH intermittently.

Note on the DISPLAY function

If you have displayed the viewfinder screen indicators on the TV, erase the indicators by pressing DISPLAY on the Remote Commander so that they will not be superimposed on the edited tape.

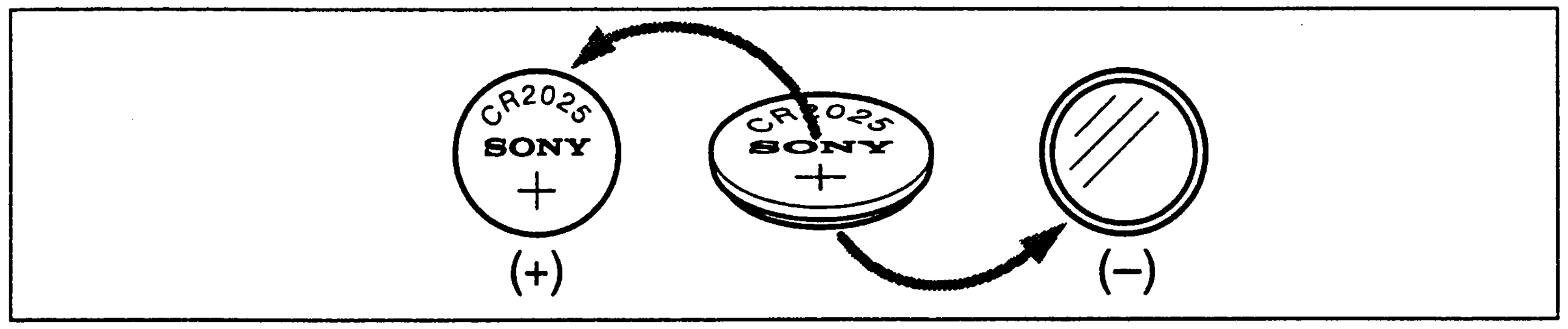
Changing the Lithium Battery

Your camcorder is supplied with a lithium battery installed. The lithium battery for the camcorder lasts for about 1 year under normal operation. When the battery becomes weak or dead, the ⊕ indicator flashes in the viewfinder for about 5 seconds when you set the POWER switch to CAMERA. In this case, **replace the battery with a Sony CR2025 or Duracell DL-2025 lithium battery. Use of any other battery may present a risk of fire or explosion.**



Note on Lithium Battery

The lithium battery has a positive (+) side and a negative (–) side as illustrated. Be sure to insert the lithium battery with the positive side facing out.



WARNING

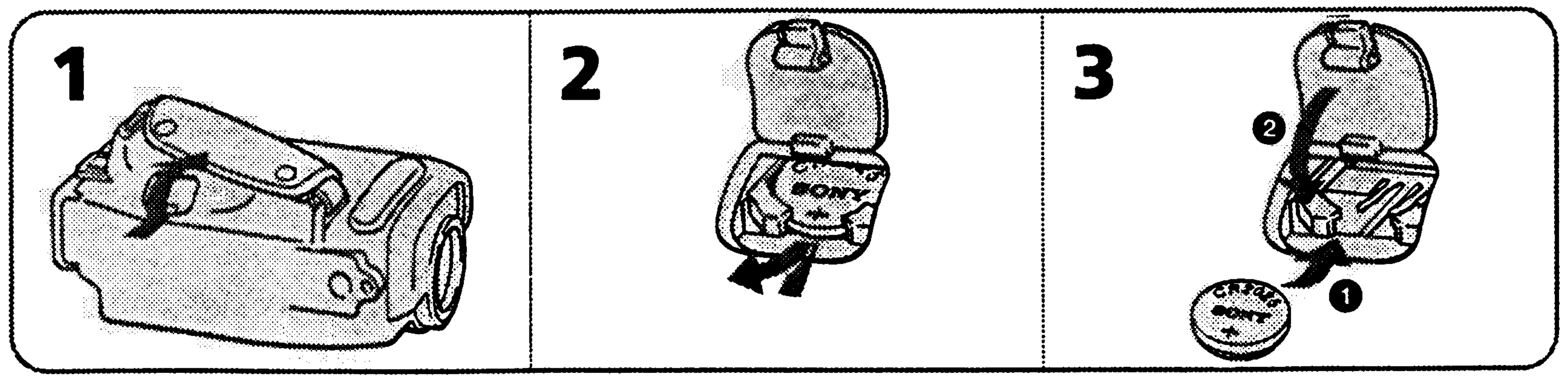
The battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

Caution

Keep the lithium battery out of the reach of children. Should the battery be swallowed, consult a doctor immediately.

Changing the Lithium Battery

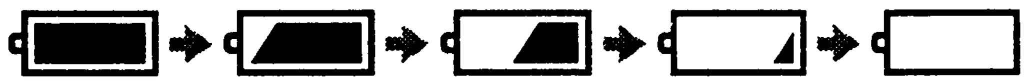
When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, you will need to reset the date, time and other items in the menu system retained by the lithium battery.
(1) Open the lid of lithium battery compartment under the grip strap of the camcorder.
(2) Push the battery down once and pull it out from the holder.
(3) Install the lithium battery with the positive (+) side facing out. Close the lid.



Tips for Using the Battery Pack

When to Replace the Battery Pack

While you are using your camcorder, the remaining battery indicator in the viewfinder decreases gradually as battery power is used up.



When the remaining battery indicator reaches the lowest point, the 🔋 indicator appears and starts flashing in the viewfinder **[b]**.
When the 🔋 indicator in the viewfinder changes from slow flashing to rapid flashing while you are recording, turn the POWER switch to OFF on the camcorder and replace the battery pack. Leave the tape in the camcorder to obtain a smooth transition between scenes after the battery pack is replaced.

Note on the remaining battery indicator
The remaining battery indicator of the camcorder may indicate a different remaining capacity from that of the battery pack with its own indicator (not supplied). The indicator on the battery pack is more accurate.

Notes on the Rechargeable Battery Pack

The Battery Pack Heats Up
During charging or recording, the battery pack heats up. This is caused by energy that has been generated and a chemical change that has occurred inside the battery pack. This is not cause for concern.

Battery Pack Care
- Remove the battery pack from the camcorder after using the battery pack, and keep it in a cool place. When the battery pack is attached to the camcorder, a small amount of current flows to the camcorder even if the POWER switch is set to OFF, which shortens battery life.
- The battery pack is always discharging even when it is not in use after charging. Therefore, you should charge the battery pack right before using the camcorder.

How to Use the Switch on the Battery Pack
This switch is provided so that you can mark the charged battery pack. Set the switch to the "no mark" position when charging is completed. Set the switch to the "red mark" position when the battery is used up (or in whichever direction you want to remind yourself) **[c]**.

The Life of the Battery Pack
If the battery indicator flashes rapidly just after turning on the camcorder with a fully charged battery pack, the battery pack should be replaced with a new fully charged one.

Charging Temperature
You should charge batteries at temperatures from 50 °F to 86 °F (from 10 °C to 30 °C). Lower temperatures require a longer charging time.

Sony Batteries are Recommended
Use of non-Sony batteries may damage your Handycam camcorder.

Notes on Charging

A Brand-new Battery Pack
A brand-new battery pack is not charged. Before using the battery pack, charge it completely.

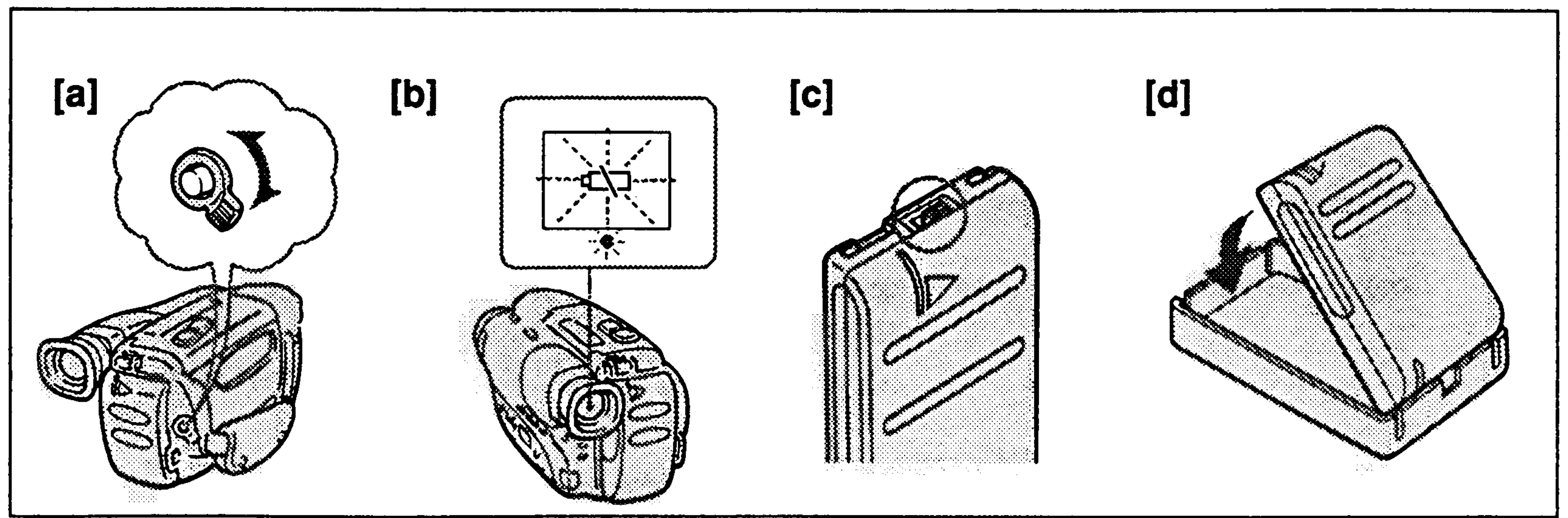
Before Recharging a Used Battery Pack
- Make sure to use up the battery before recharging.
- If recording is completed before the 🔋 indicator appears in the viewfinder, you should remove the tape, turn the POWER switch to CAMERA, turn STANDBY up, and leave the camcorder until the battery indicator flashes rapidly.
- When you use the AC-S10 power adaptor or the BC-S10 portable battery charger, you can use the discharging function.
- **Charging a usable battery pack causes a lowering of battery capacity. Battery capacity can be recovered if you fully discharge and charge the battery pack again.**

After Long Storage
Recharge the battery pack after a long period of storage. If the battery pack is charged fully but not used for a long time (about 1 year), it becomes discharged. Charge it again, but in this case the battery life will be shorter than normal. After several charging and discharging cycles, the battery life will recover its original capacity.

Notes on the Terminals

If the terminals (metal parts on the back) are not clean, the battery duration will be shortened.
When the terminals are not clean or when the battery pack has not been used for a long time, repeatedly install and remove the battery pack. This improves the contact condition. Also, wipe the + and – terminals with a soft cloth or paper.

Be Sure to Observe the Following
- **To prevent an accident caused by a short circuit, do not allow metal objects such as a necklace to touch the battery terminals. When carrying the battery pack, attach the terminal cover [d].**
- Keep the battery pack away from fire.
- Keep the battery pack dry.
- Do not open nor convert the battery pack.
- Do not expose the battery pack to any mechanical shock.



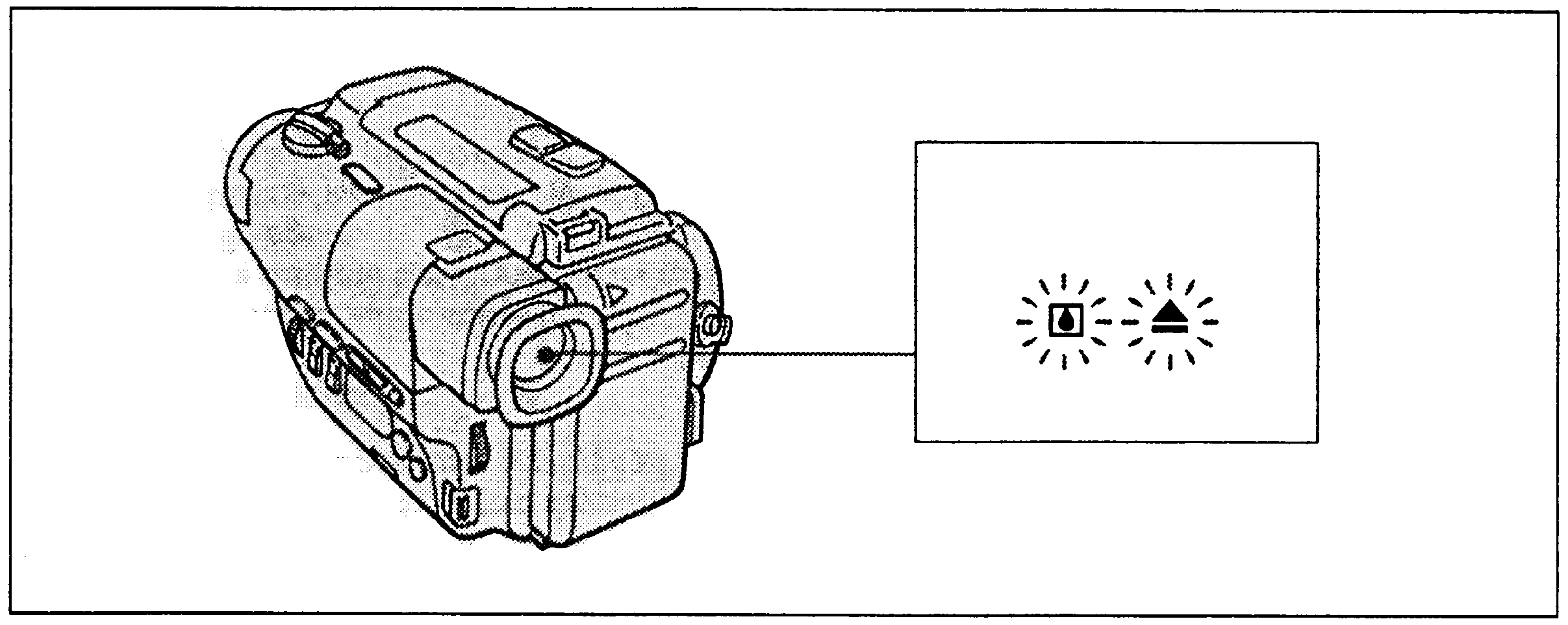
Maintenance Information and Precautions

Moisture Condensation

If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or the unit may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. However, take the following precautions.

Inside the Camcorder

When the ▣ and ⏏ indicators flash in the viewfinder, moisture has condensed inside the camcorder. If this happens, no other functions except for tape ejection will work.
Eject the tape, turn off the camcorder and leave it with the cassette holder open for at least one hour. The camcorder can be used again if the ▣ indicator does not appear when the power is turned on again.



On the Surface of the Tape

If there is moisture on the surface of the tape, when you insert the cassette and press a tape transport button (▷ PLAY, etc.), the ⏏ indicator in the viewfinder flashes.
In this case, no other functions except for tape ejection will work.
Eject the tape, turn off the camcorder and leave it with the cassette holder open for at least one hour. The camcorder can be used again if the ⏏ indicator does not appear when you insert the cassette and press one of the tape transport buttons.

On the Lens

If moisture condenses on the lens, no indicator appears, but the picture becomes dim. Turn off the power and do not use the camcorder for about one hour.

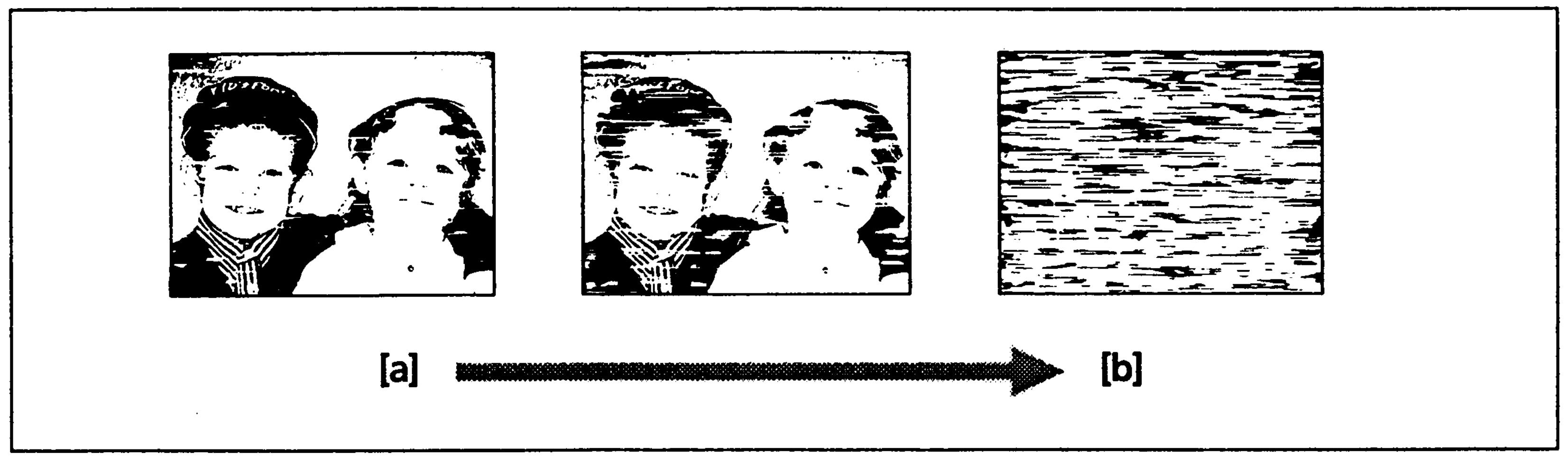
How to Prevent Moisture Condensation

When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to adapt to room conditions over a period of time.

(1) Be sure to tightly seal the plastic bag containing the camcorder.
(2) Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about 1 hour).

Video Head Cleaning

To ensure normal recording and clear pictures, clean the video heads often. When the ⊗ indicator and " ⏏ CLEANING CASSETTE" message appear one after another in the viewfinder or playback pictures are "noisy" or hardly visible, the video heads may be dirty.



[a] Slightly dirty
[b] Very dirty

If this happens, clean the video heads with the Sony V8-25CLH cleaning cassette (not supplied). After checking the picture, if it is still "noisy," repeat the cleaning. (Do not repeat cleaning more than 5 times.)

Caution

Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

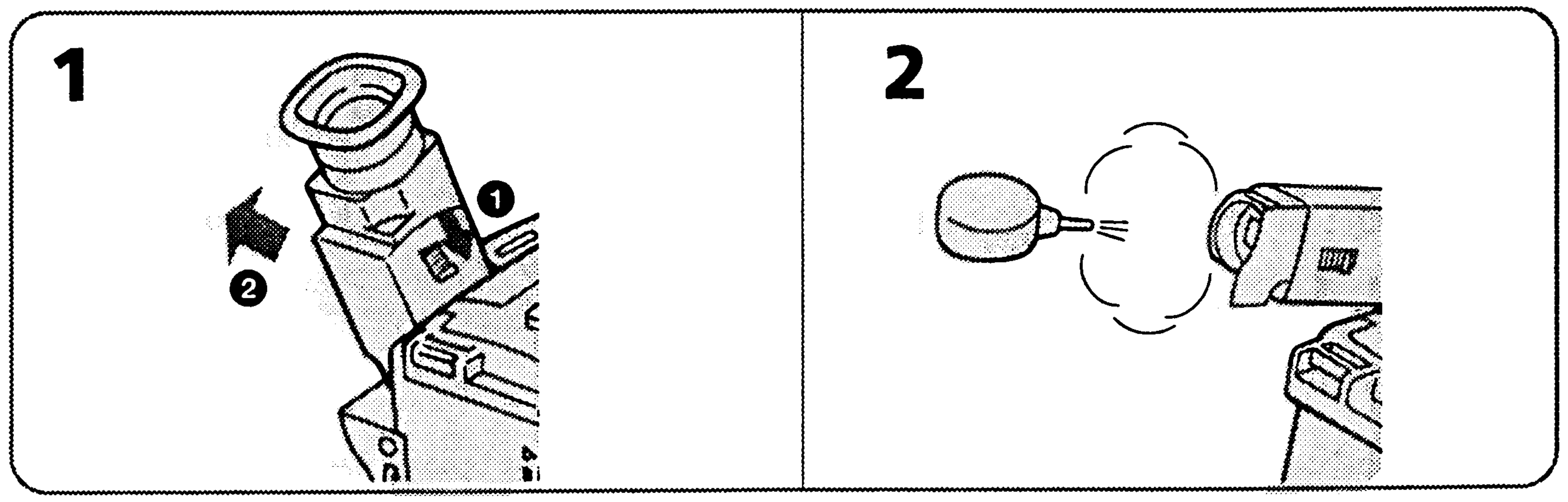
Note

If the V8-25CLH cleaning cassette is not available in your area, consult your nearest Sony dealer.

Removing Dust from Inside the Viewfinder

For Models with a Monochrome Viewfinder (CCD-TR36/TR83 only)

(1) While holding down the switch on the viewfinder barrel, slide the eyecup to the left.
(2) Clean the surface with a commercially available blower.



Maintenance Information and Precautions

Precautions

Camcorder Operation

- Operate the camcorder on 6.0 V (battery pack) or 7.5 V (AC power adaptor).
- For DC or AC operation, use the accessories recommended in this manual.
- Should any solid object or liquid get inside the casing, unplug the camcorder and have it checked by Sony dealer before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch set to OFF when not using the camcorder.
- Do not wrap up the camcorder and operate it since heat may build up internally.
- Keep the camcorder away from strong magnetic fields or mechanical vibration.

On Handling Tapes

Do not insert anything in the small holes on the rear of the cassette. These holes are used to sense the type, thickness of tape, if the tab is out or in, etc.

Camcorder Care

- When the camcorder is not to be used for a long time, disconnect the power source and remove the tape. Periodically turn on the power, operate the camera and player sections and play back a tape for about 3 minutes.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on it, remove them with a soft cloth.
- Clean the camcorder body with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.

AC Power Adaptor

Charging

- **Repeated charging while some capacity remains causes a lowering of battery capacity. However, the original battery capacity can be recovered if you use the battery completely and charge it fully again.**
- Charge the battery pack on a flat surface without vibration.
- The battery pack will get hot during charging. This is normal.

Others

- Model for the USA and Canada: One blade of the plug is wider than the other for safety purposes and will fit into the power outlet only one way. If you are unable to insert the plug fully into the outlet, contact your dealer.
- Unplug the unit from the wall (mains) outlet when not in use for a long time. To disconnect the cord (mains lead), pull it out by the plug. Never pull the cord itself.
- Do not operate the unit with a damaged cord or if the unit has been dropped or damaged.
- Do not bend the AC power cord forcibly, or put a heavy object on it. This will damage the cord and may cause a fire or an electrical shock.
- Be sure that nothing metallic comes into contact with the metal parts of the connecting plate. If this happens, a short may occur and the unit may be damaged.
- Always keep the metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment because it will disturb AM reception and video operation.
- The unit becomes warm while in use. This is normal.
- Do not place the unit in locations that are:
  - Extremely hot or cold
  - Dusty or dirty
  - Very humid
  - Vibrating

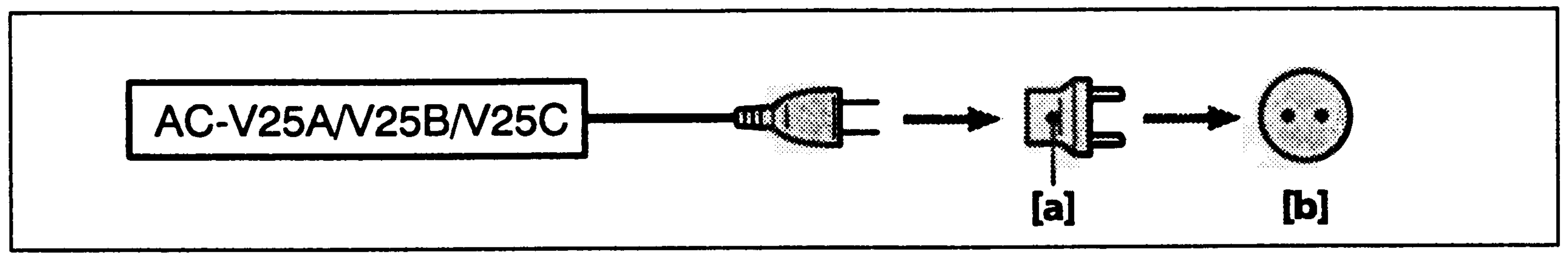
If any difficulty should arise, unplug the unit and contact your nearest Sony dealer.

Using Your Camcorder Abroad

Each country has its own electric and TV color systems. Before using your camcorder abroad, check the following points.

Power Sources

You can use your camcorder in any country with the supplied AC power adaptor within 110 V to 240 V AC, 50/60 Hz.
Use a commercially available AC plug adaptor **[a]**, if necessary, depending on the design of the wall outlet **[b]**.



Difference in Color Systems

This camcorder is an NTSC system based camcorder. If you want to view the playback picture on a TV, it must be an NTSC system based TV or a PAL-M system based TV with an NTSC/PAL-M transcoder. Check the following list.

NTSC system countries

Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

PAL system countries

Australia, Austria, Belgium, China, Denmark, Finland, Germany, Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system country

Brazil

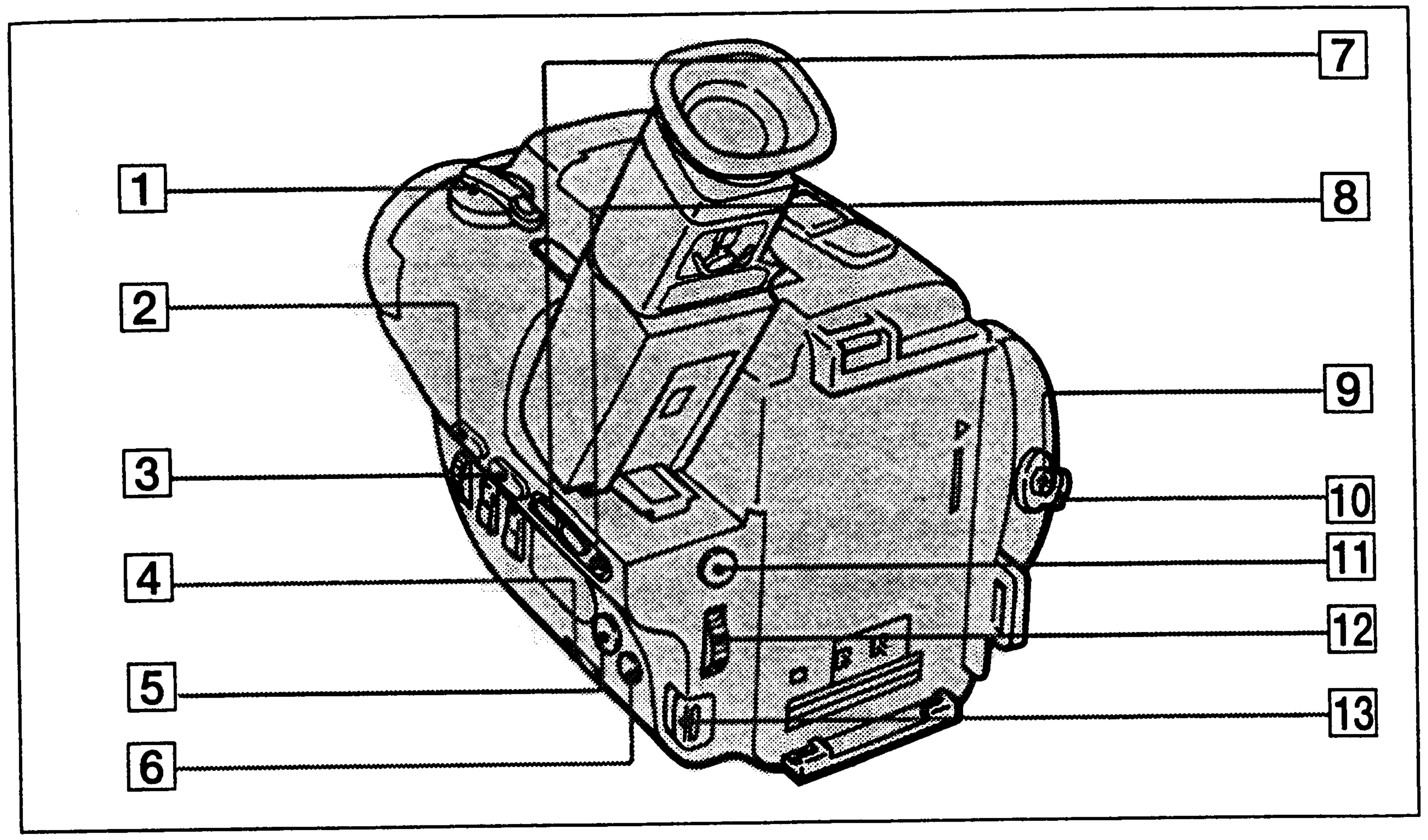
PAL-N system countries

Argentina, Paraguay, Uruguay

SECAM system countries

Bulgaria, Czech Republic, France, Guiana, Hungary, Iran, Iraq, Monaco, Poland, Russia, Slovak Republic, Ukraine, etc.

Identifying the Parts



1 **POWER switch** (p. 10, 16)

2 **FADER button** (p. 22)

3 **PROGRAM AE button** (p. 21)

4 **REC TIME switch** (p. 27)

5 **PICTURE EFFECT button** (p. 26)

6 **BACKLIGHT button** (p. 20)

7 **DATE and TIME buttons** (p. 19)

8 **COUNTER RESET button** (p. 11)

9 **START/STOP button** (p. 10)

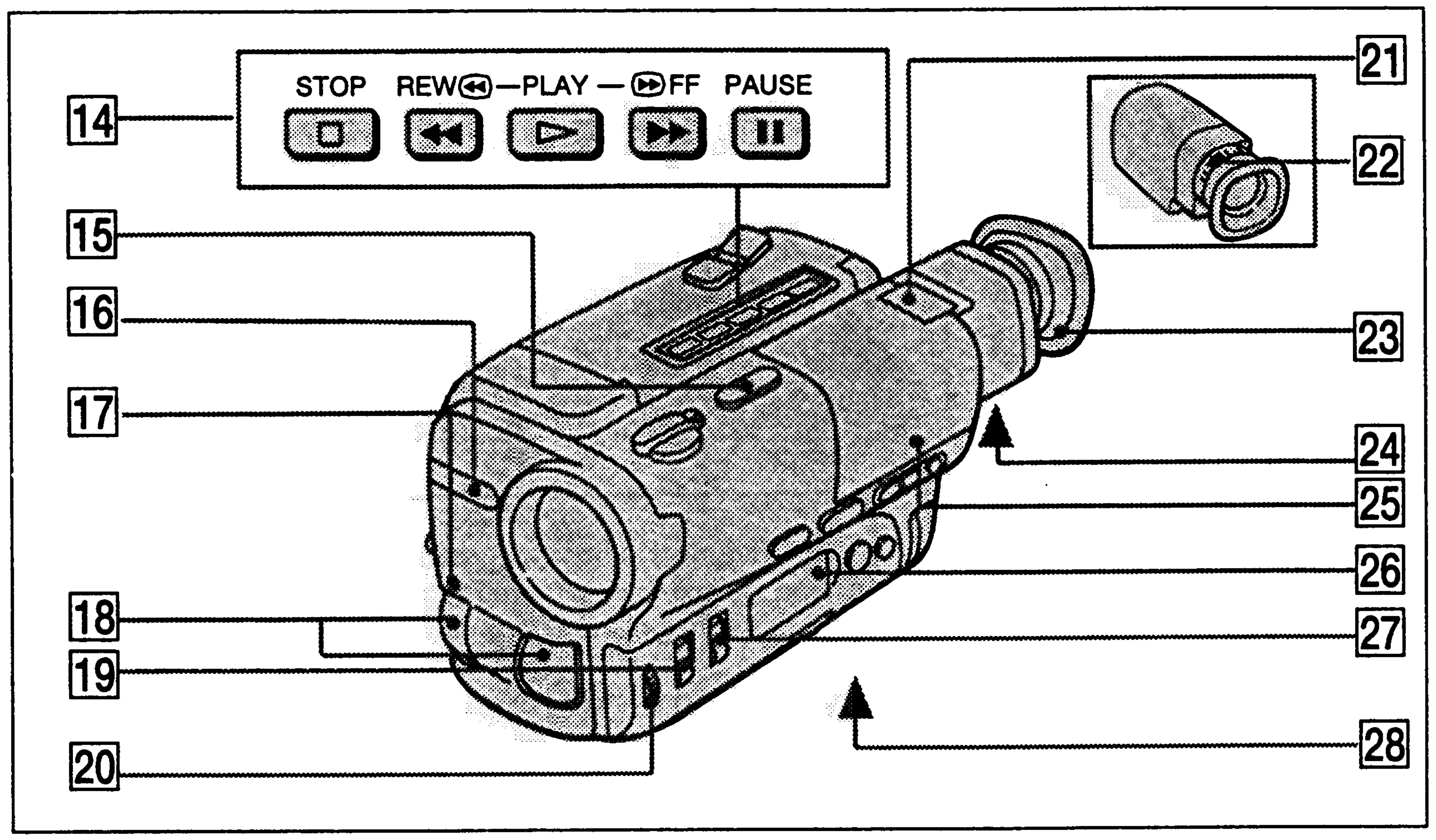
10 **STANDBY switch** (p. 10)

11 **MENU button** (p. 28)

12 **Menu dial** (p. 28)

13 **BATT (battery release) knob** (p. 8)

Identifying the Parts



14 **Tape transport buttons** (p. 16)
- □ STOP (stop)
- ◀◀ REW (rewind)
- ▷ PLAY(playback)
- ▶▶ FF (fastforward)
- ❚❚ PAUSE (pause)

15 **EDITSEARCH button** (p. 14)

16 **Remote sensor** (p. 49)
Aim the Remote Commander here for remote control.

17 **Camera recording/battery lamp**

18 **Built-in microphone**

19 **FOCUS switch** (p. 23)

20 **Focus dial** (p. 23)

21 **Lighting aperture (CCD-TR73/TR76/TR93** only)

22 **Viewfinder lens adjustment ring (CCD-TR36/TR83)** (p. 11)

23 **Eyecup**

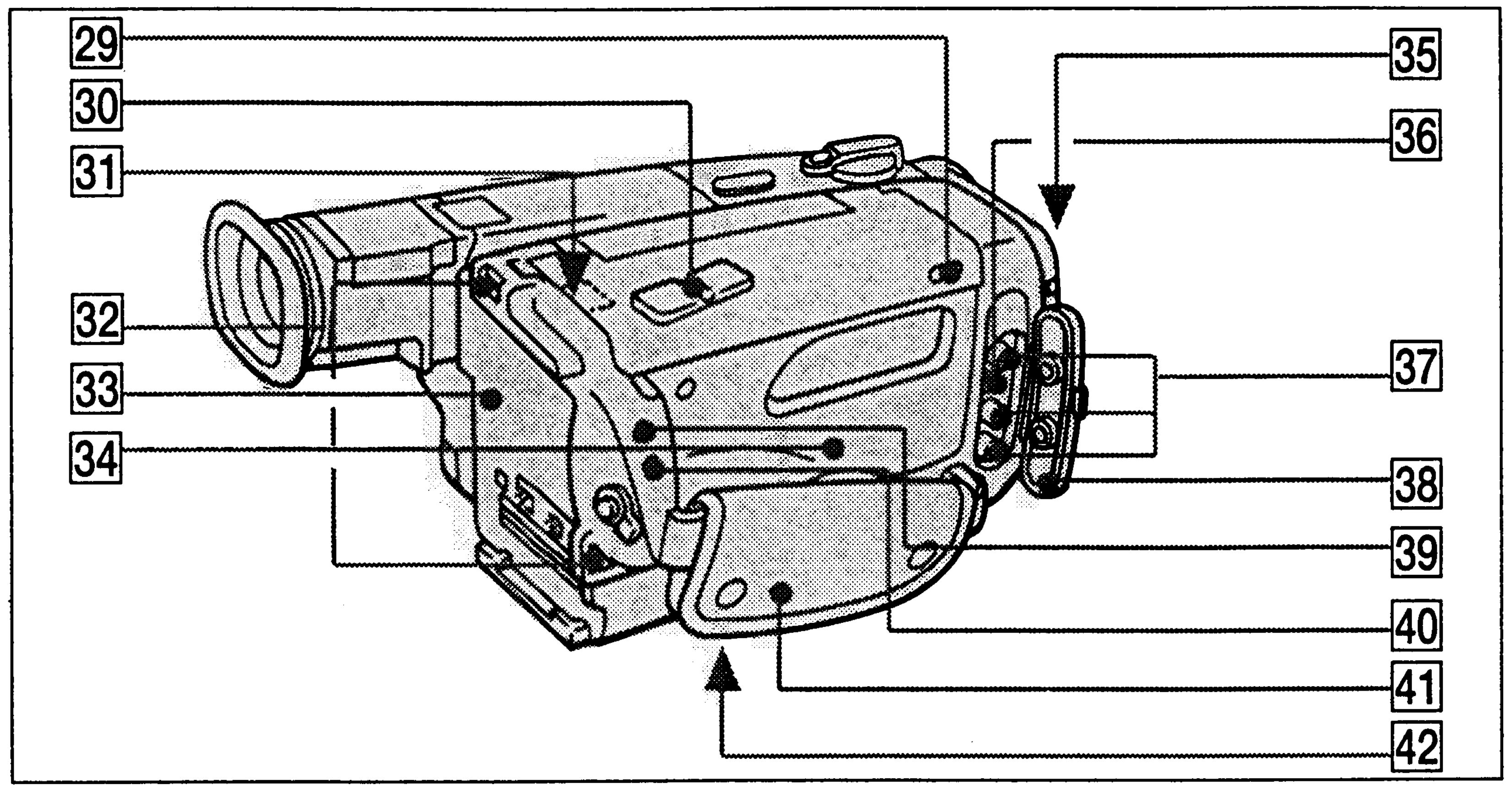
24 **Viewfinder lens adjustment lever (CCD-TR73/TR76/TR93)** (p. 11)

25 **Viewfinder** (p. 11)

26 **Display window** (p. 50)

27 **STEADY SHOT switch (CCD-TR83/TR93** only) (p. 24)

28 **Tripod receptacle** (p. 13)



29 **Cassette compartment lid release knob** (p. 9)

30 **Power zoom button** (p. 12)

31 **Eject button (under the cover)** (p. 9)

32 **Hooks for shoulder strap** (See below.)

33 **Battery mounting surface** (p. 8)

34 **Cassette compartment** (p. 9)

35 **MIC jack (PLUG IN POWER)**
Connect an external microphone (not supplied). This jack also accepts a "plug-in-power" microphone.

36 **RFU DC OUT (RFU adaptor DC output) jack** (p. 15)

37 **Audio/Video output jacks** (p. 15)

38 **Jack cover**

39 **LANC Ⓛ control jack**
Ⓛ stands for Local Application Control Bus System. The Ⓛ control jack is used for controlling the tape transport of video equipment and peripherals connected to it. This jack has the same function as the jack indicated as CONTROL L or REMOTE.

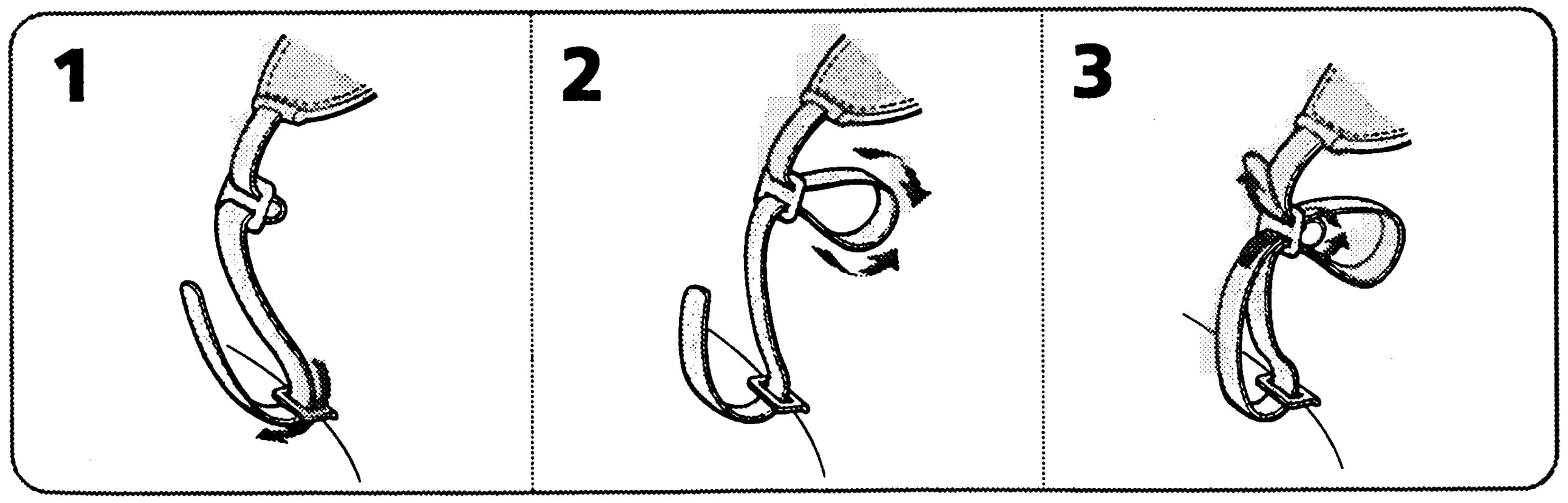
40 **∩ (Headphones) jack**

41 **Grip strap** (p. 13)

42 **Lithium battery compartment** (p. 31)

Attaching the Shoulder Strap

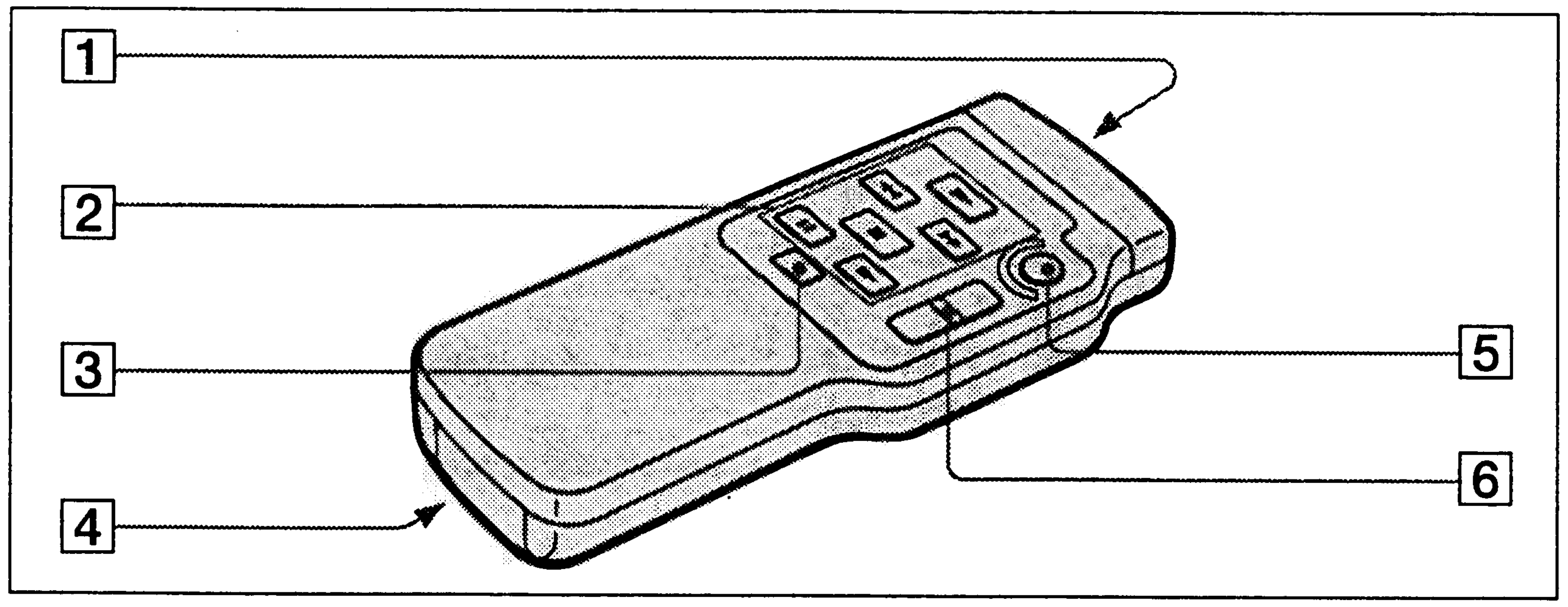
Attach the supplied shoulder strap to the hooks for the shoulder strap (32).



Identifying the Parts

Remote Commander

The buttons that have the same name on the Remote Commander as on the camcorder function identically.



1 **Transmitter**
Point toward the remote sensor to control the camcorder after turning on the POWER switch on the camcorder.

2 **Tape transport buttons**

3 **DISPLAY button**

4 **Size AA (R6) battery holder**

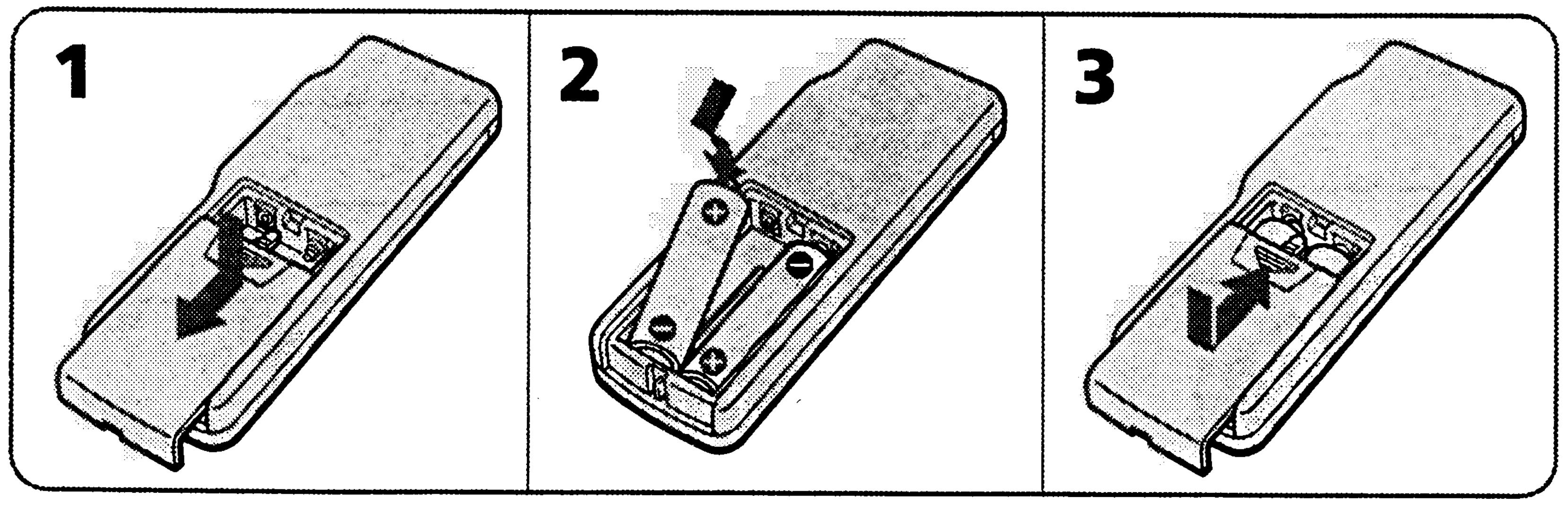
5 **START/STOP button**

6 **Power zoom button**
The zooming speed is unchangeable in the Remote Commander.

To Prepare the Remote Commander

To use the Remote Commander, you must insert two size AA (R6) batteries. Use the supplied size AA (R6) batteries.

(1) Remove the battery cover from the Remote Commander.
(2) Insert both of the size AA (R6) batteries with correct polarity.
(3) Put the battery cover back onto the Remote Commander.



Note on battery life

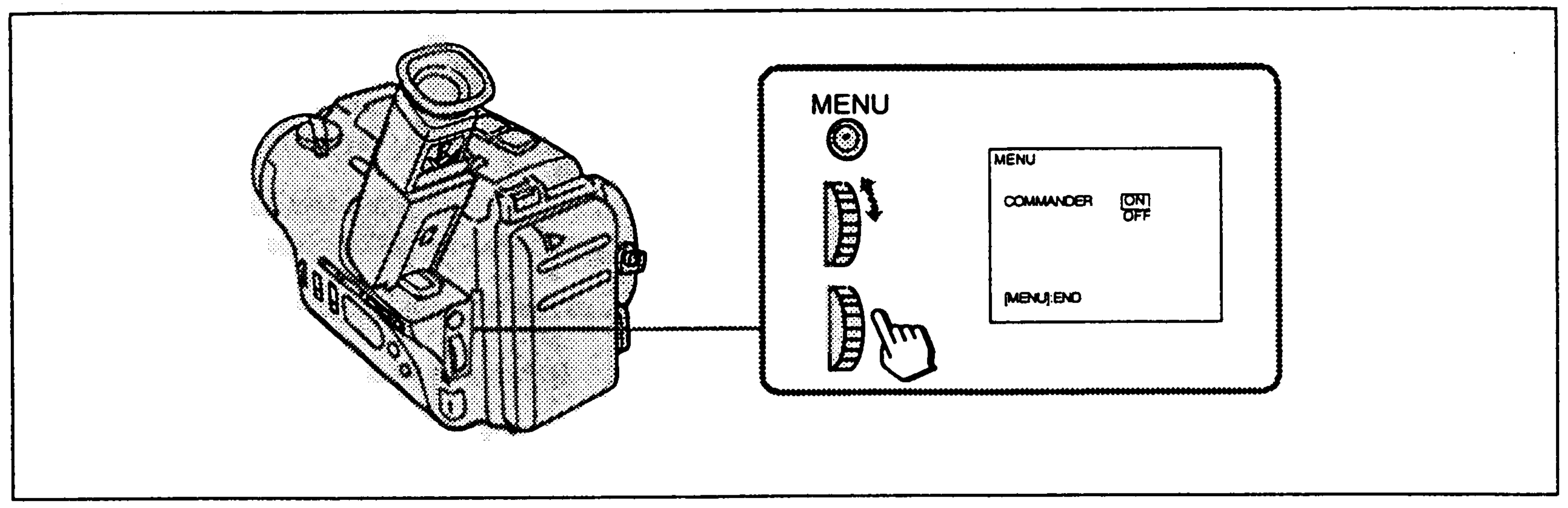
The batteries for the Remote Commander last about 6 months under normal operation. When the batteries become weak or dead, the Remote Commander does not work.

To avoid damage from possible battery leakage

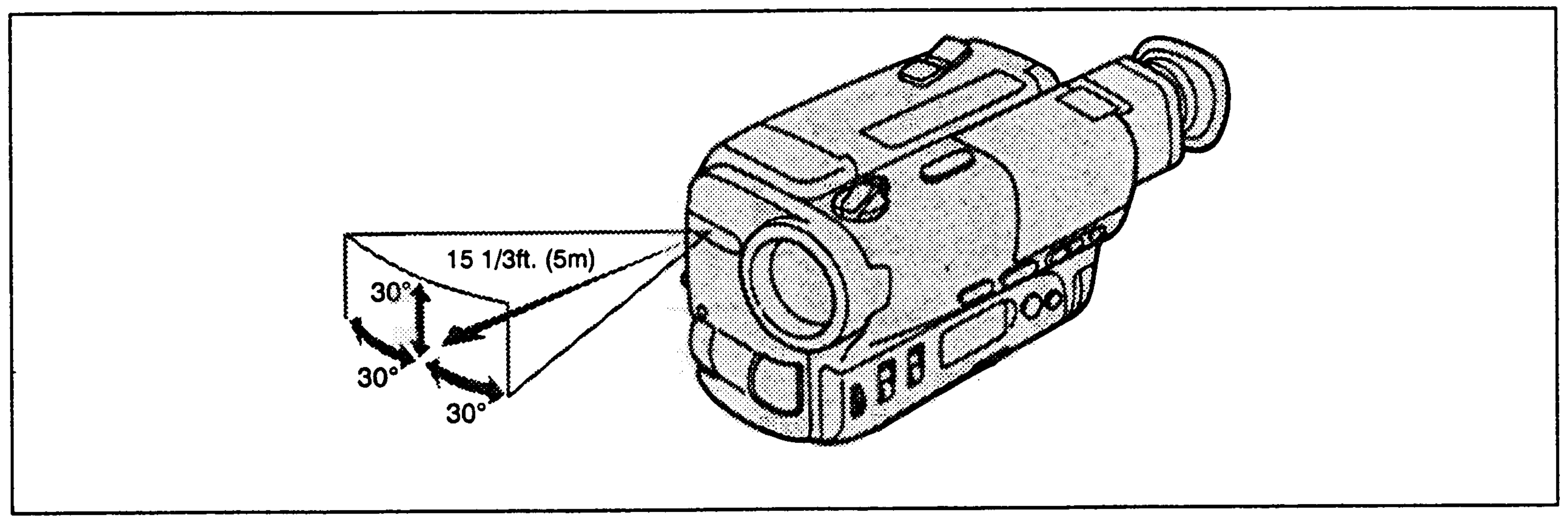
Remove the batteries when you will not use the Remote Commander for a long time.

To Use the Remote Commander

Make sure that the COMMANDER is set to ON in the menu system.



Remote Control Direction



Notes on the Remote Commander

- Keep the remcte sensor away from strong light sources such as direct sunlight or illumination. Otherwise, the remote control may not be effective.
- Be sure that there is no obstacle between the remote sensor and the Remote Commander.
- This camcorder works at commander mode VTR 2. The commander modes (1, 2 and 3) are used to distinguish this camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR at commander mode VTR 2, we recommend you change the commander mode or cover the remote sensor of the VCR with black paper.

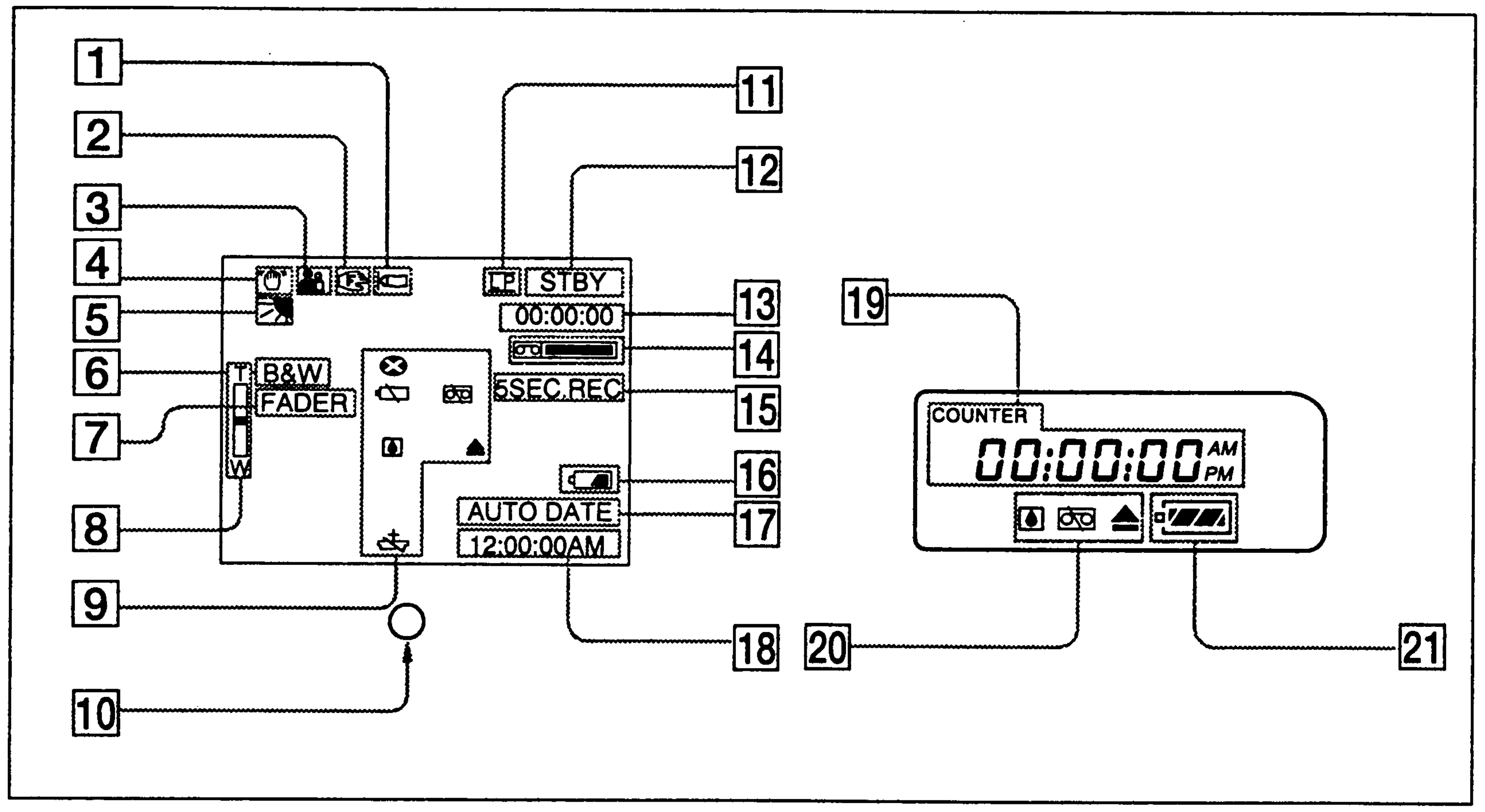
To Watch the Demonstration

You can watch a brief demonstration of pictures with special effects.
If the demonstration appears when you turn on the camcorder for the first time, exit the Demo mode to use your camcorder.
To enter Demo mode, (1) Eject the cassette and turn the POWER switch to OFF. **(2)** Turn STANDBY up. **(3)** While holding down ▷, turn the POWER switch to CAMERA. Demonstraion starts. The demonstration stops when you insert the cassette.
Note that once you enter Demo mode, this mode is retained as long as the lithium battery is in place. Therefore, demonstration starts automatically 10 minutes later everytime you turn the POWER switch to CAMERA, or after you eject the cassette.
To exit Demo mode, (1) Turn the POWER switch to OFF. **(2)** Turn STANDBY up. **(3)** While holding down □, turn the POWER switch to CAMERA.

Identifying the Parts

Operation Indicators

For details on each indicator, refer to the pages indicated in the parentheses.



1 **WIND indicator** (p. 29)

2 **Manual focusing** (p. 23)

3 **PROGRAM AE indicator** (p. 21)

4 **Steady shot indicator (CCD-TR83/TR93** only) (p. 24)

5 **Back Light indicator** (p. 20)

6 **PICTURE EFFECT indicator** (p. 25)

7 **FADER indicator** (p. 22)

8 **Power zoom indicator** (p. 12)

9 **Warning indicators** (p. 51)

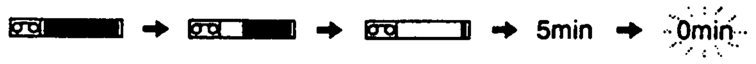
10 **Recording lamp/Battery lamp**

11 **Lights up when playing back a tape recorded in LP mode.**

12 **Tape transport mode**

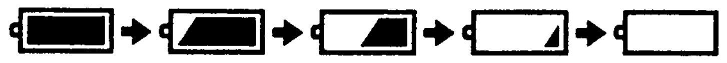
13 **Tape counter** (P. 11)

14 **Remaining tape indicator**



15 **5-Second recording indicator** (p. 27)

16 **Remaining battery indicator** (p. 34)



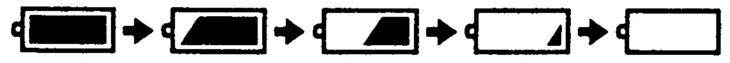
17 **AUTO DATE indicator** (p. 10)

18 **Date or time indicator** (p. 20)

19 **Tape counter** (p. 11)
Date or time indicator (p. 20)

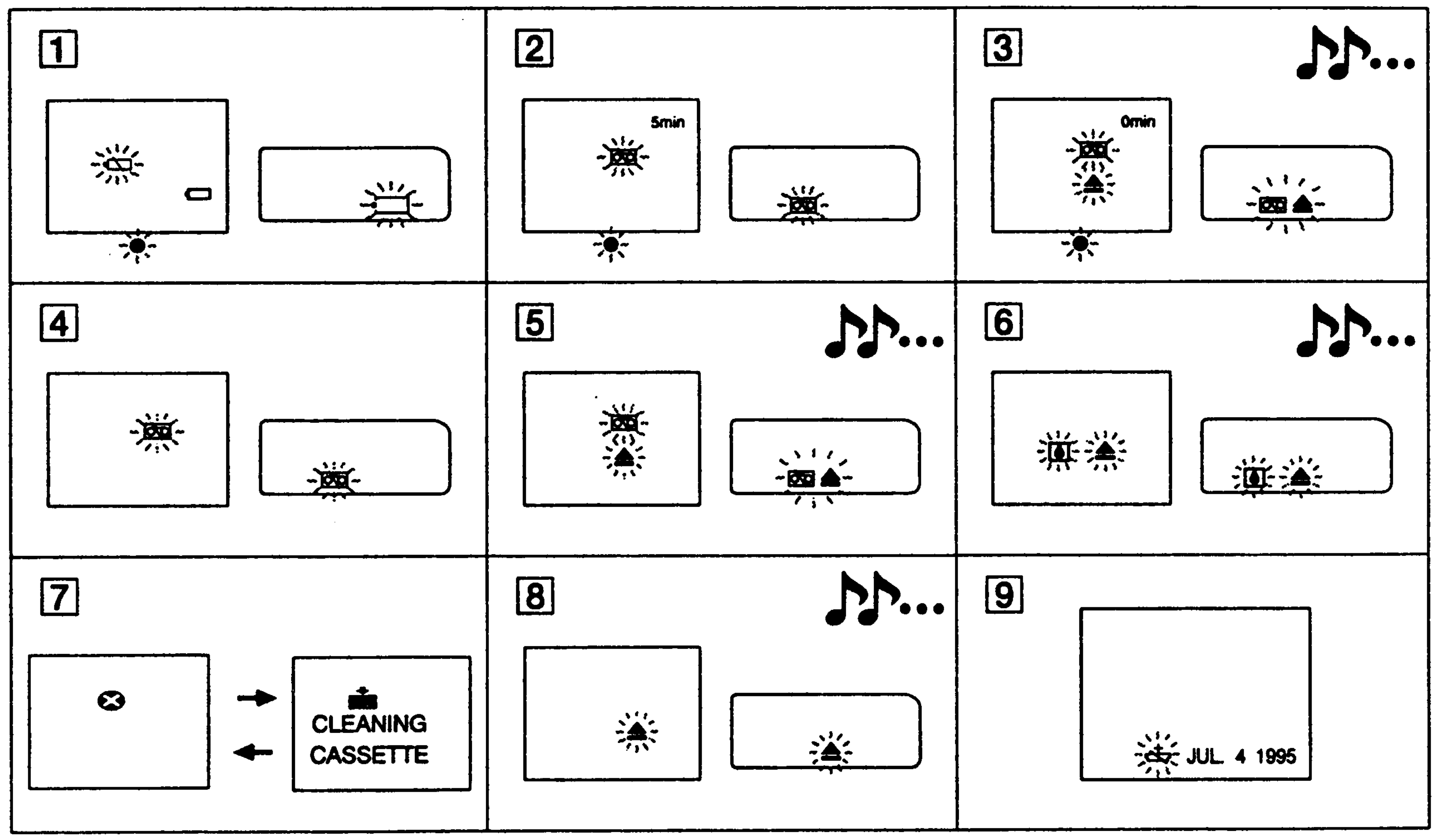
20 **Warning indicators** (p. 51)

21 **Remaining battery indicator** (p. 34)



Warning Indicators

If indicators flash in the viewfinder or in the display window, check the following:
♪: you can hear the beep sound when the BEEP is set to ON.



1 **The battery is weak or dead.**
Slow flashing: The battery is weak.
Fast flashing: The battery is dead.

2 **The tape is near the end.**
The flashing is slow.

3 **The tape has run out.**
The flashing becomes rapid.

4 **No tape has been inserted.**

5 **The tab on the tape is out (red).**

6 **Moisture condensation has occurred** (p. 36).

7 **The video heads may be contaminated** (p. 37).
This indicator appears only on the viewfinder.

8 **Some other trouble has occurred.**
Disconnect the power source and contact your Sony dealer or local authorized facility.

9 **The lithium battery is weak or is not installed** (p. 31).

15. Auto White Balance Standard Data Input

Subject	White pattern standard picture frame
Adjustment Page	F
Adjustment Address	0C, 0D, 0E, 0F

Adjusting method:

1) Turn the power of the unit OFF/ON.
2) Set data: 01 to page:6, address: 00
3) Check that the data of page: 6, address: 11 is 00.
4) Wait for 2 seconds.
5) Set data: 11 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 0D to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
   (When the standard data is taken in, the data will be automatically input to addresses 0C to 0F of page F.)
7) Check that the data of page: 6, address: 11 is 01.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.

16. Auto White Balance Adjustment

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	Check with the DDS display on the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	11, 12
Specified Value	R ratio: 2B40 to 2BC0 B ratio: 5E00 to 5F00

Adjusting method:

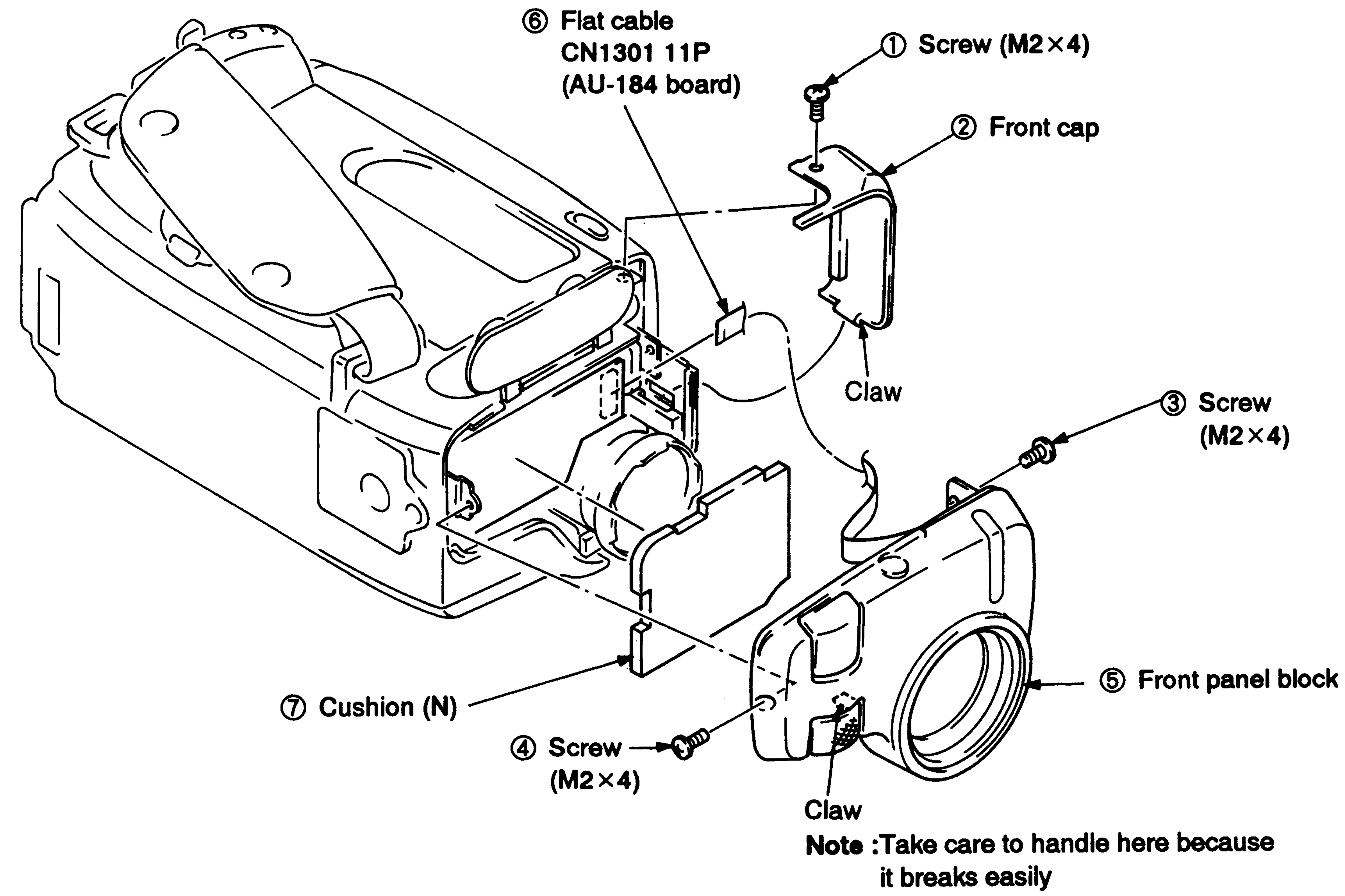
1) Place the C14 filter for color temperature correction on the lens.
2) Set data: 01 to page: 1, address: 00.
3) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
4) Set data: 01 to page: 6 address: 00.
5) Set data: D0 to page: F, address: 10, and press the PAUSE button of the adjusting remote commander.
6) Set data: 04 to page: 6, address: 02.
7) Change the data of page: F, address: 11, and adjust the average value of the DDS display data (the display data at the bottom right of the EVF or the TV monitor) to the R ratio specified value.
8) Press the PAUSE button of the adjusting remote commander.
9) Set data: 05 to page: 6, address: 02.
10) Change the data of page: F, address: 12, and adjust the average value of the DDS display data to the B ratio specified value.
11) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

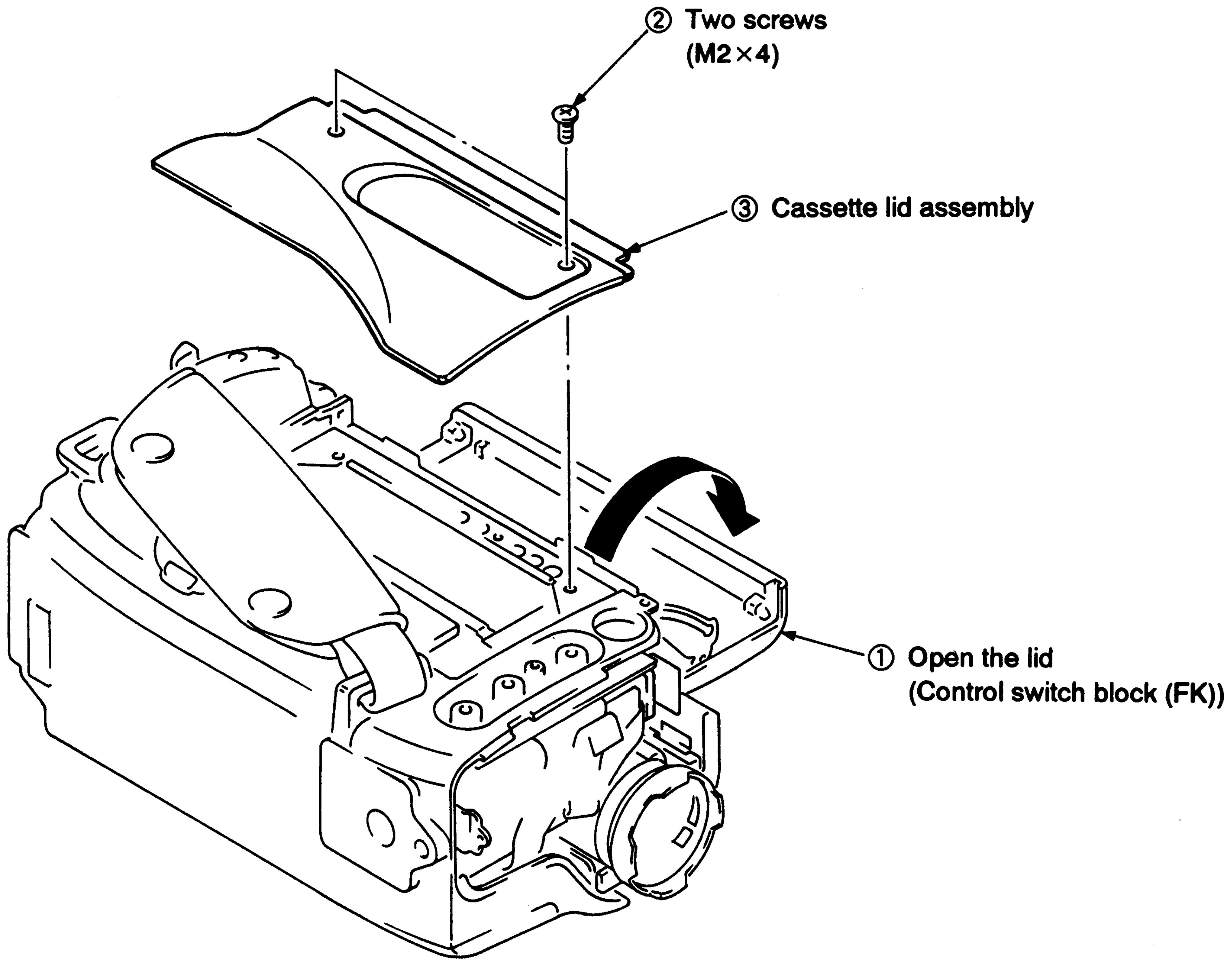
1) Set data: 00 to page: F, address: 10, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 6, address: 02.
4) Page D protect mode setting.
   Page: 1, address: 00, data: 00

SECTION 2
DISASSEMBLY

2-1. REMOVAL OF FRONT PANEL BLOCK

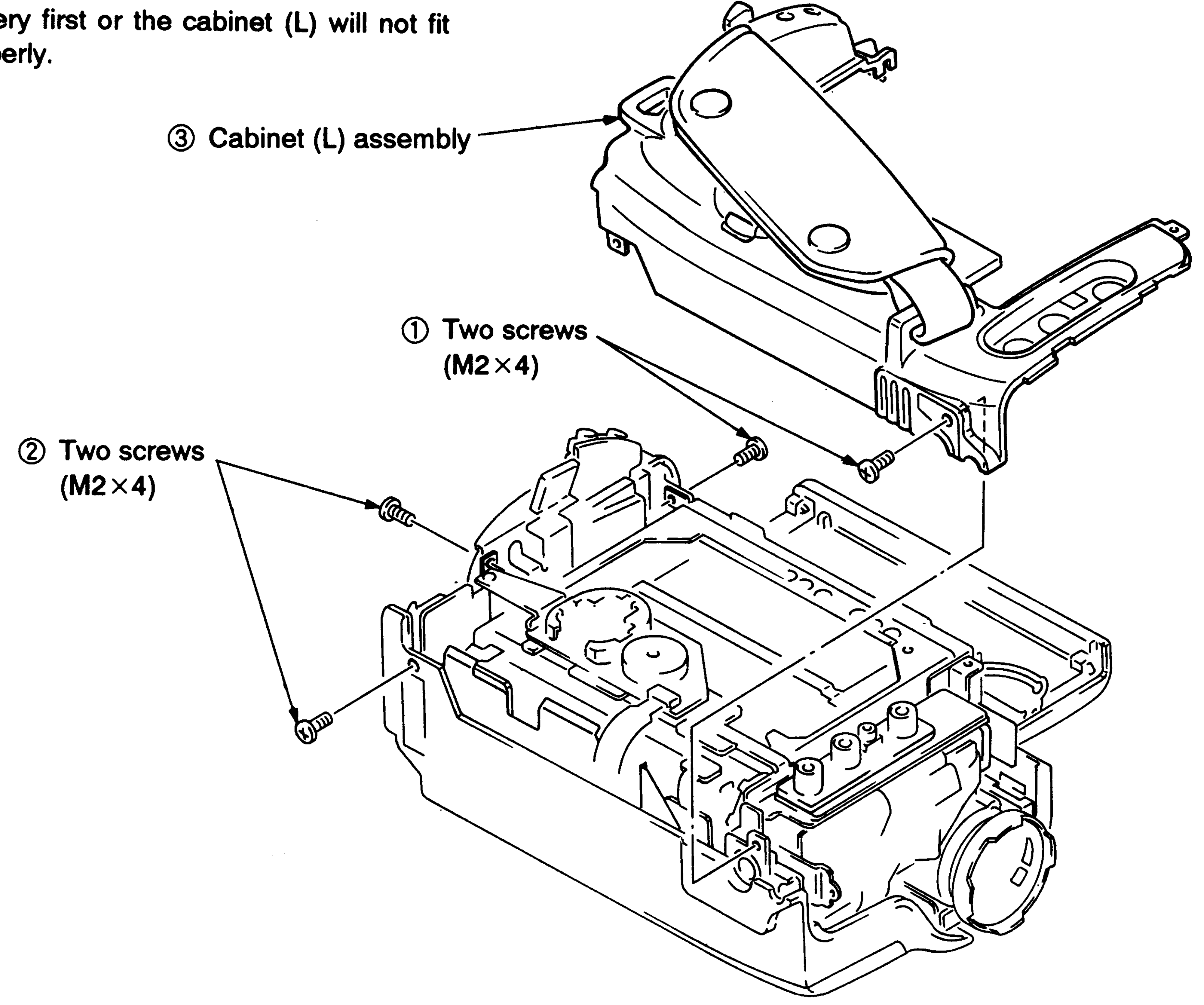


2-2. REMOVAL OF CASSETTE LID ASSEMBLY

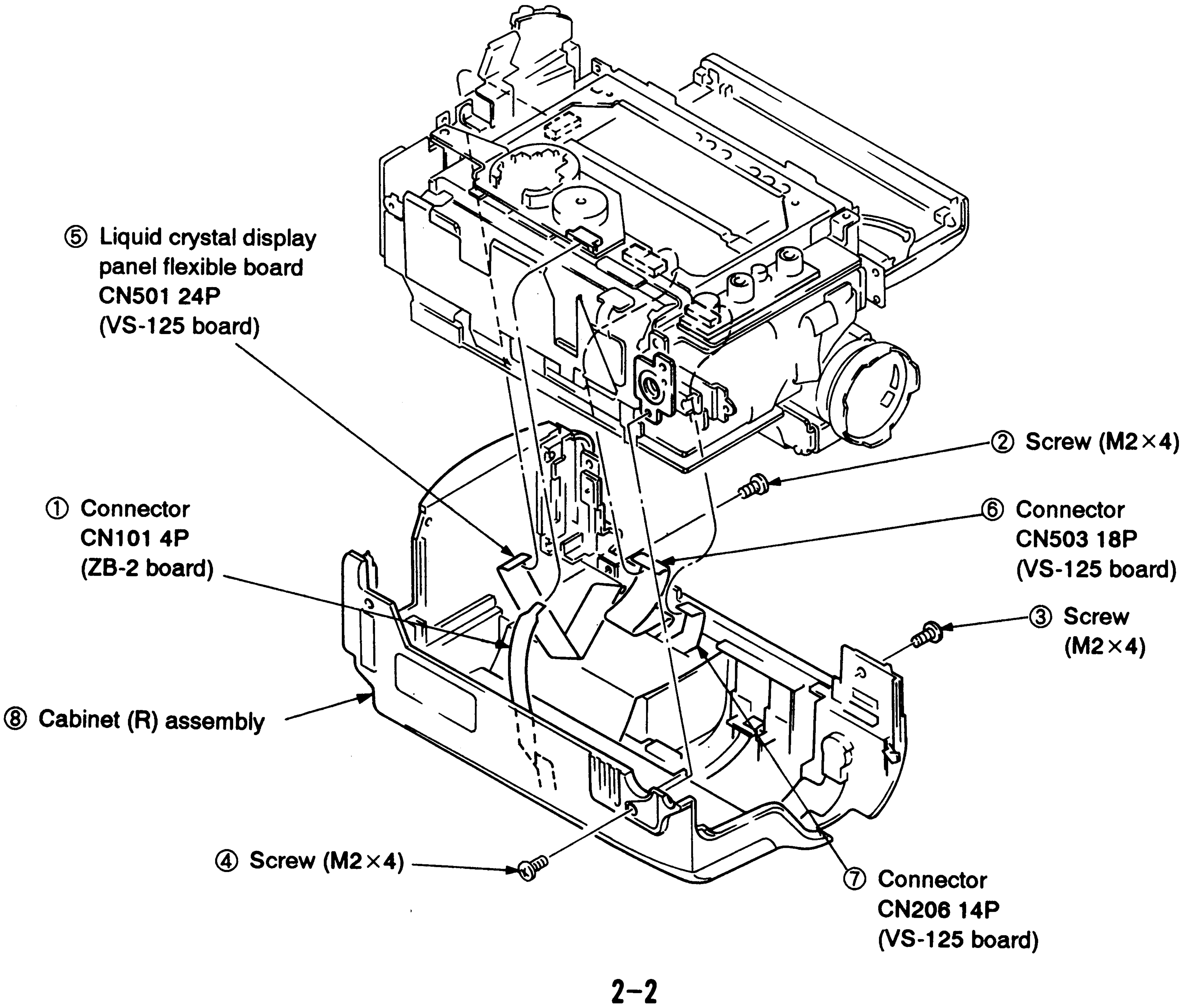


2-3. REMOVAL OF CABINET (L) ASSEMBLY

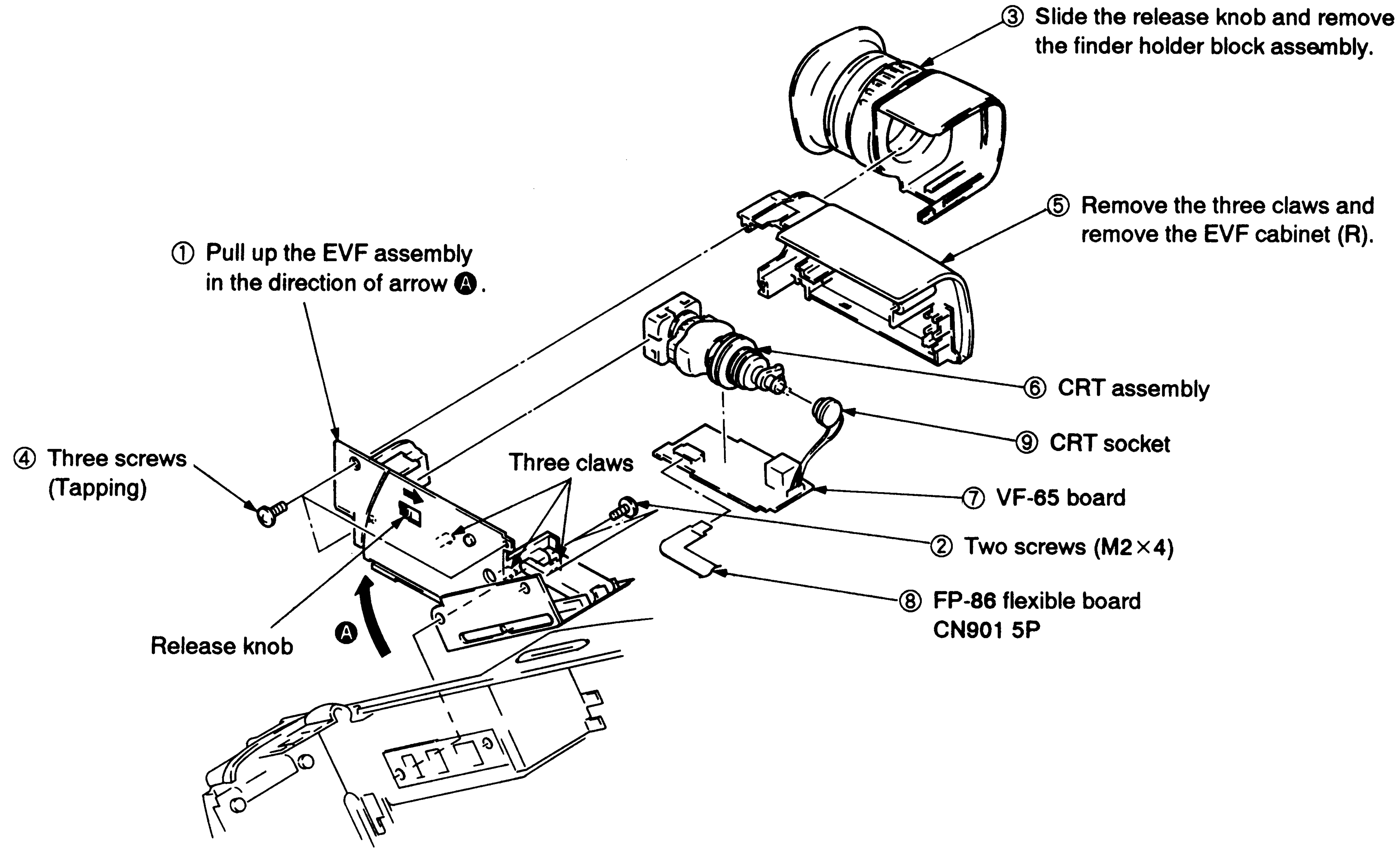
Note: When incorporating the cabinet (L) block assembly, be sure to remove the lithium battery first or the cabinet (L) will not fit properly.



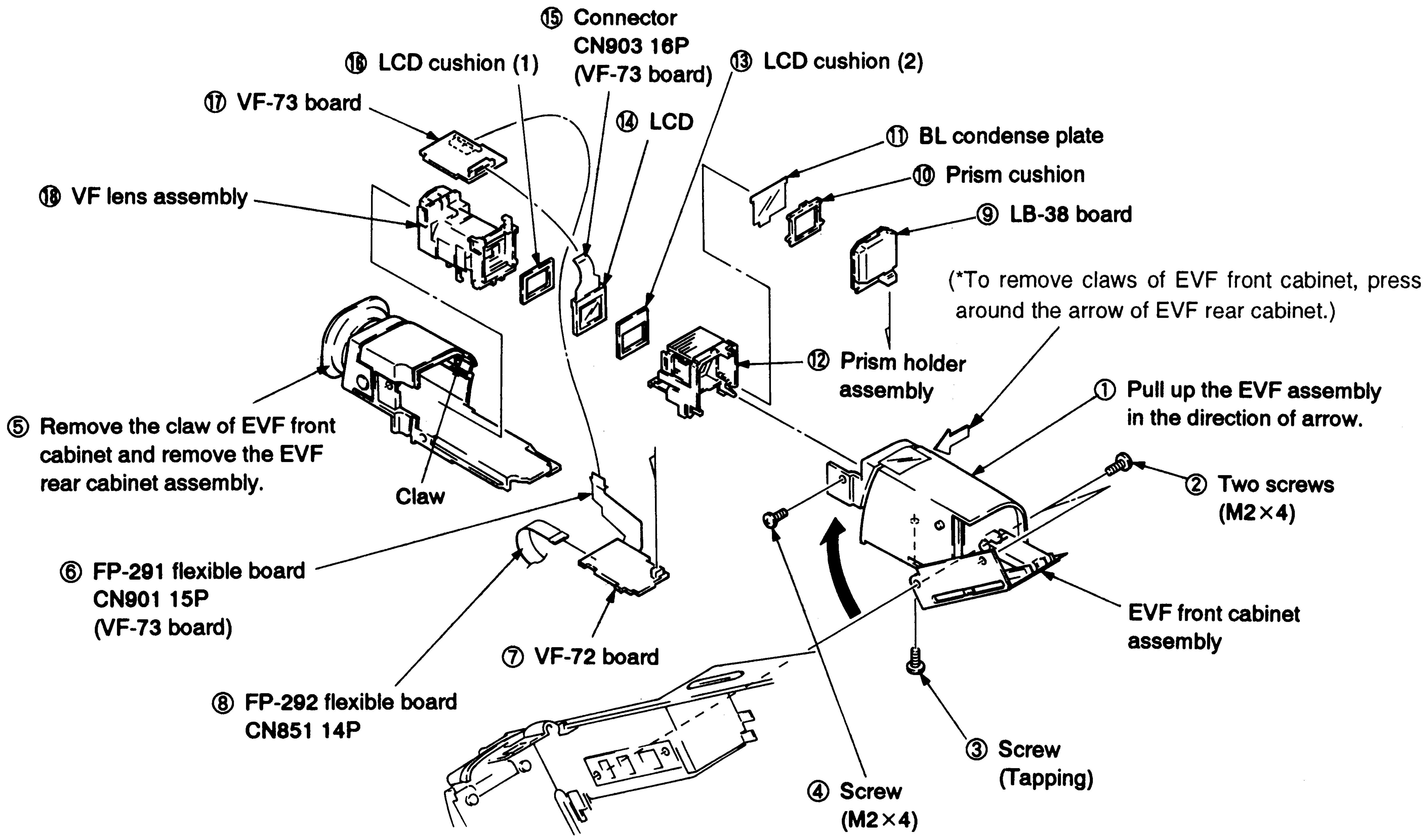
2-4. REMOVAL OF CABINET (R) ASSEMBLY


⑤ Liquid crystal display panel flexible board CN501 24P (VS-125 board)
② Screw (M2×4)
① Connector CN101 4P (ZB-2 board)
⑥ Connector CN503 18P (VS-125 board)
③ Screw (M2×4)
⑧ Cabinet (R) assembly
④ Screw (M2×4)
⑦ Connector CN206 14P (VS-125 board)

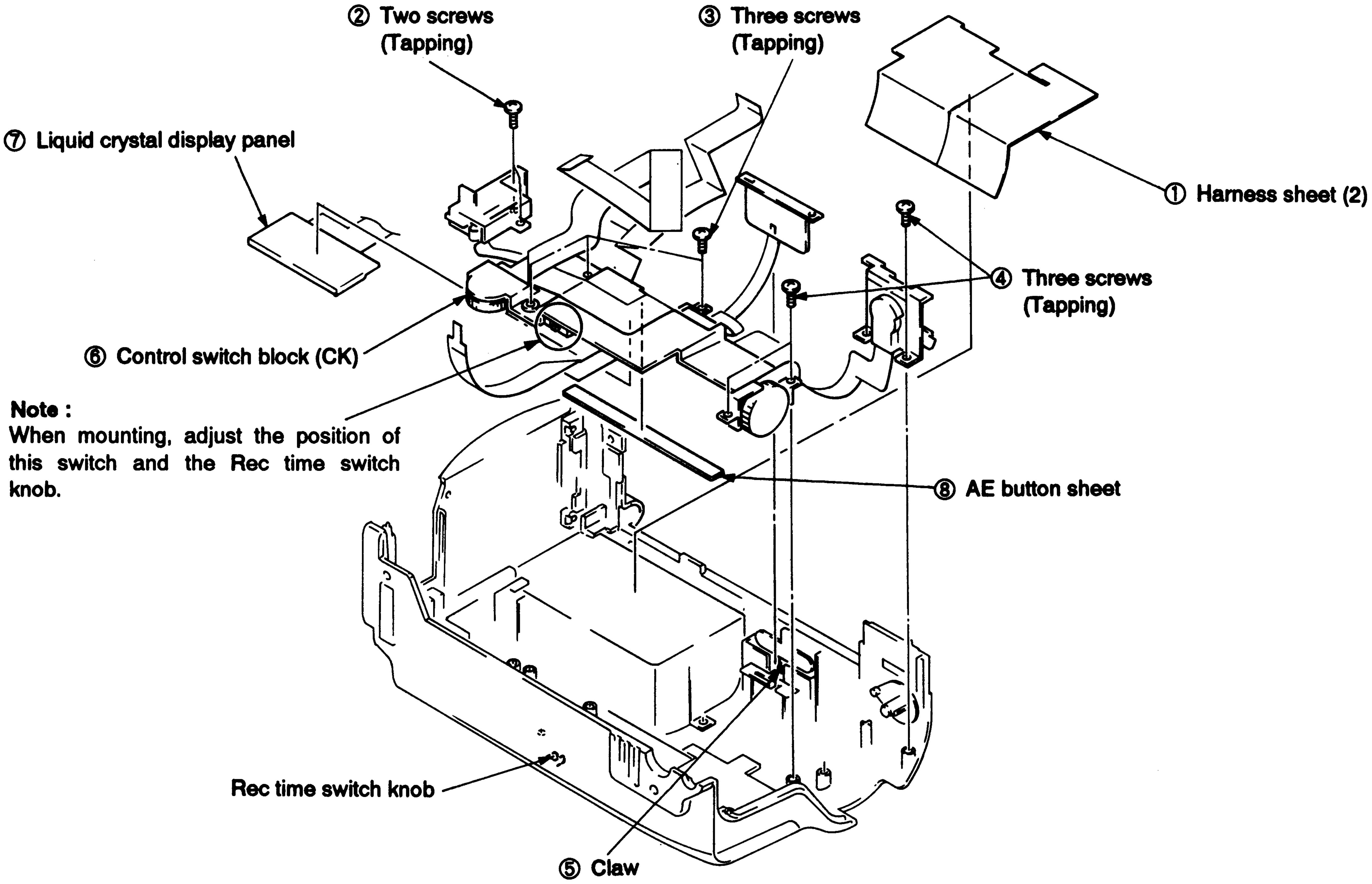
2-5. REMOVAL OF W/B EVF ASSEMBLY (TR36/TR83/TR100)


③ Slide the release knob and remove the finder holder block assembly.
⑤ Remove the three claws and remove the EVF cabinet (R).
① Pull up the EVF assembly in the direction of arrow Ⓐ.
⑥ CRT assembly
④ Three screws (Tapping)
⑨ CRT socket
Three claws
⑦ VF-65 board
② Two screws (M2×4)
⑧ FP-86 flexible board CN901 5P
Release knob
Ⓐ

2-5. REMOVAL OF COLOR EVF ASSEMBLY (TR73/TR76/TR93/TR560/TR600/TR670/TR880)

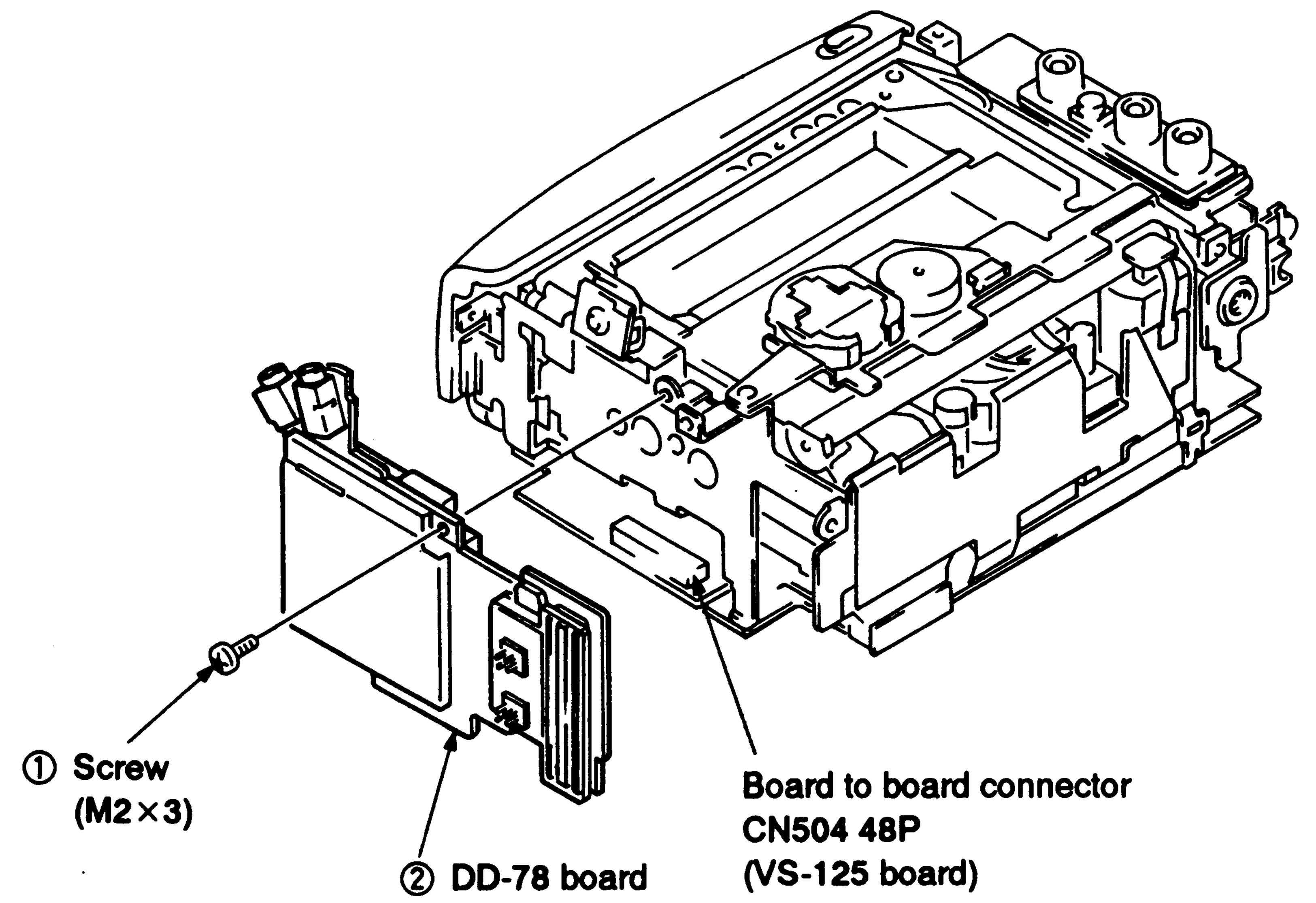

⑮ Connector CN903 16P (VF-73 board)
⑯ LCD cushion (1)
⑬ LCD cushion (2)
⑰ VF-73 board
⑭ LCD
⑪ BL condense plate
⑩ Prism cushion
⑱ VF lens assembly
⑨ LB-38 board
(*To remove claws of EVF front cabinet, press around the arrow of EVF rear cabinet.)
⑫ Prism holder assembly
① Pull up the EVF assembly in the direction of arrow.
⑤ Remove the claw of EVF front cabinet and remove the EVF rear cabinet assembly.
Claw
② Two screws (M2×4)
⑥ FP-291 flexible board CN901 15P (VF-73 board)
EVF front cabinet assembly
⑦ VF-72 board
⑧ FP-292 flexible board CN851 14P
③ Screw (Tapping)
④ Screw (M2×4)

2-6. REMOVAL OF CONTROL SWITCH BLOCK (CK)

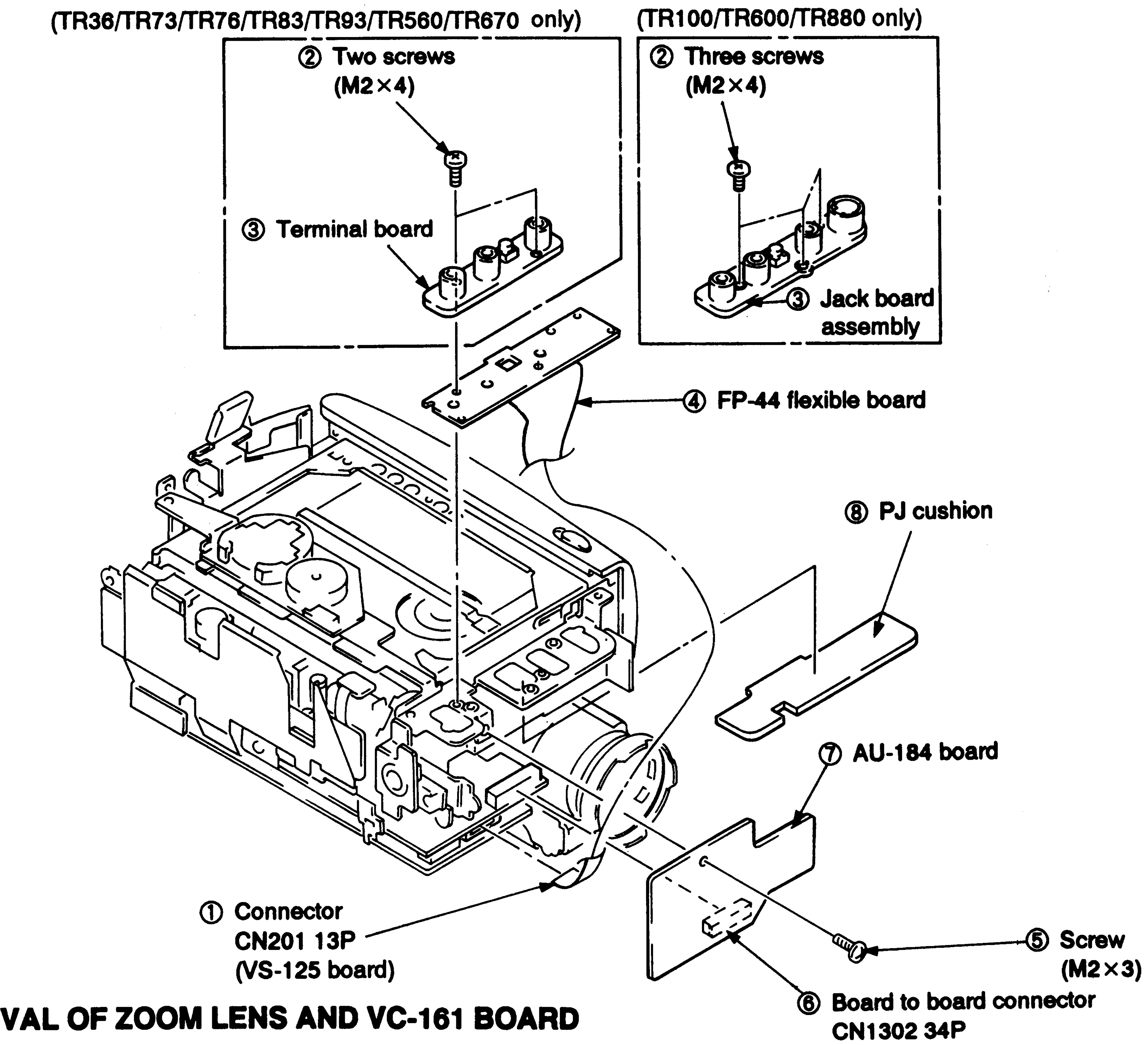


Note :
When mounting, adjust the position of this switch and the Rec time switch knob.

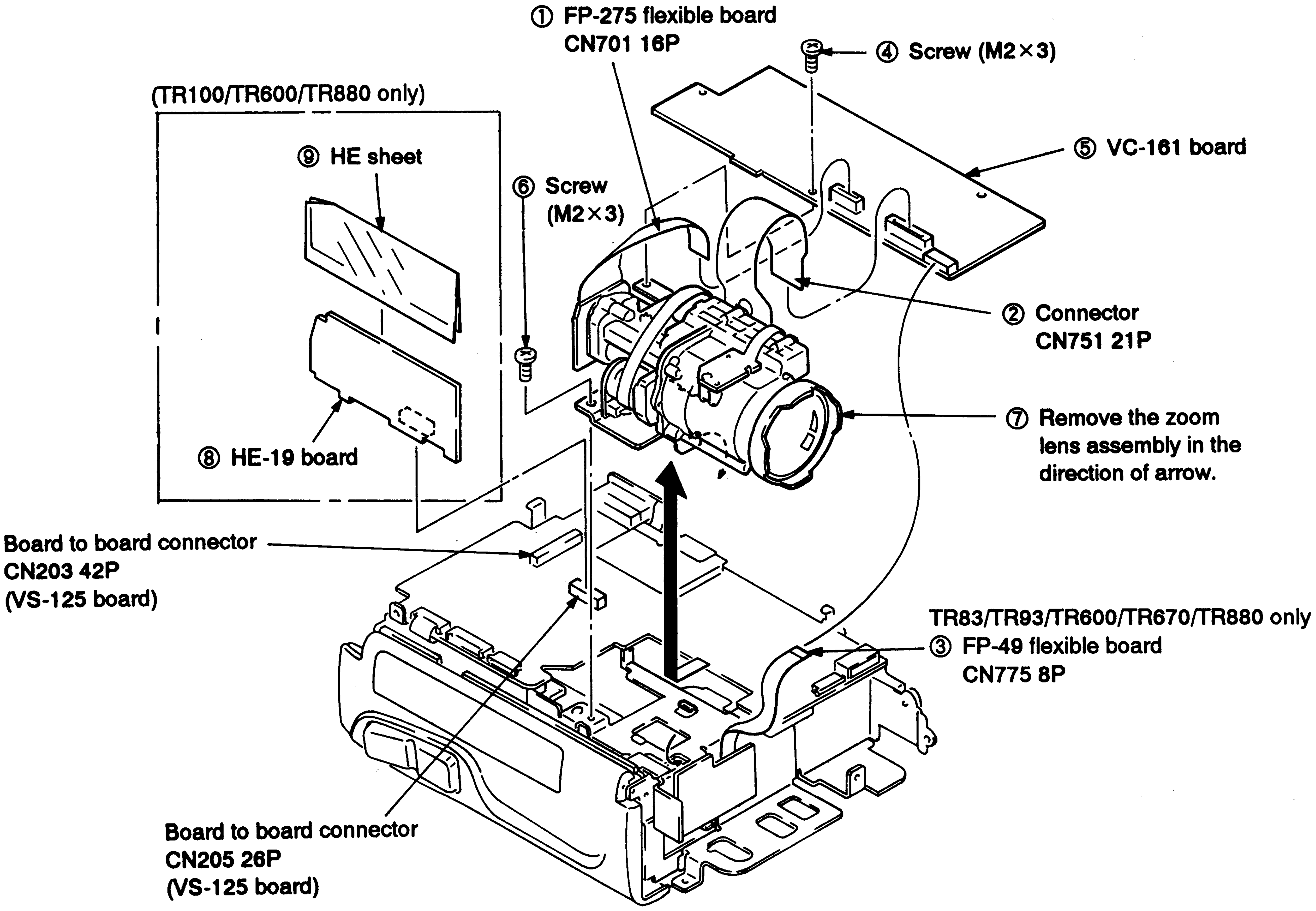
2-7. REMOVAL OF DD-78 BOARD



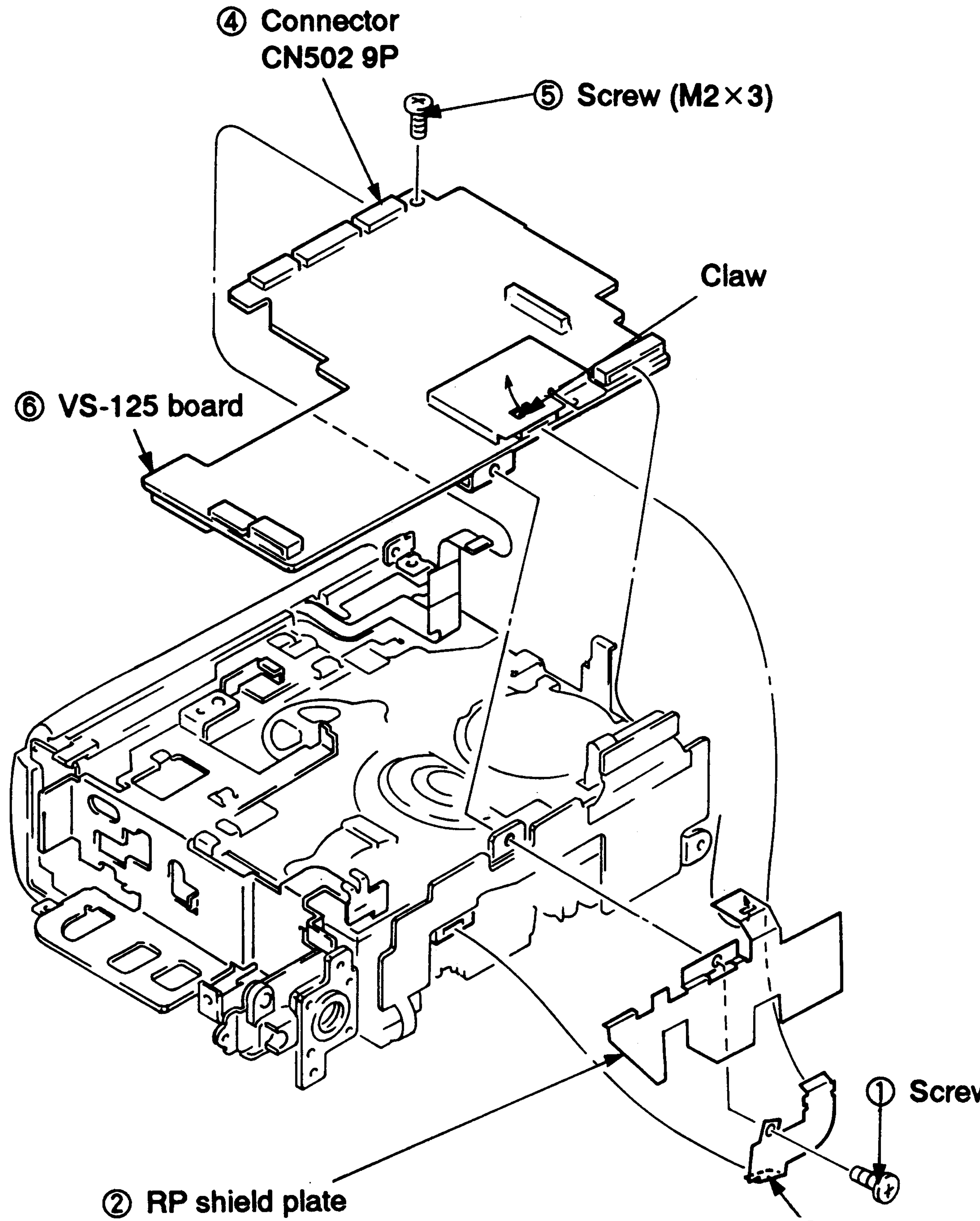
2-8. REMOVAL OF TERMINAL BOARD AND AU-184 BOARD



2-9. REMOVAL OF ZOOM LENS AND VC-161 BOARD

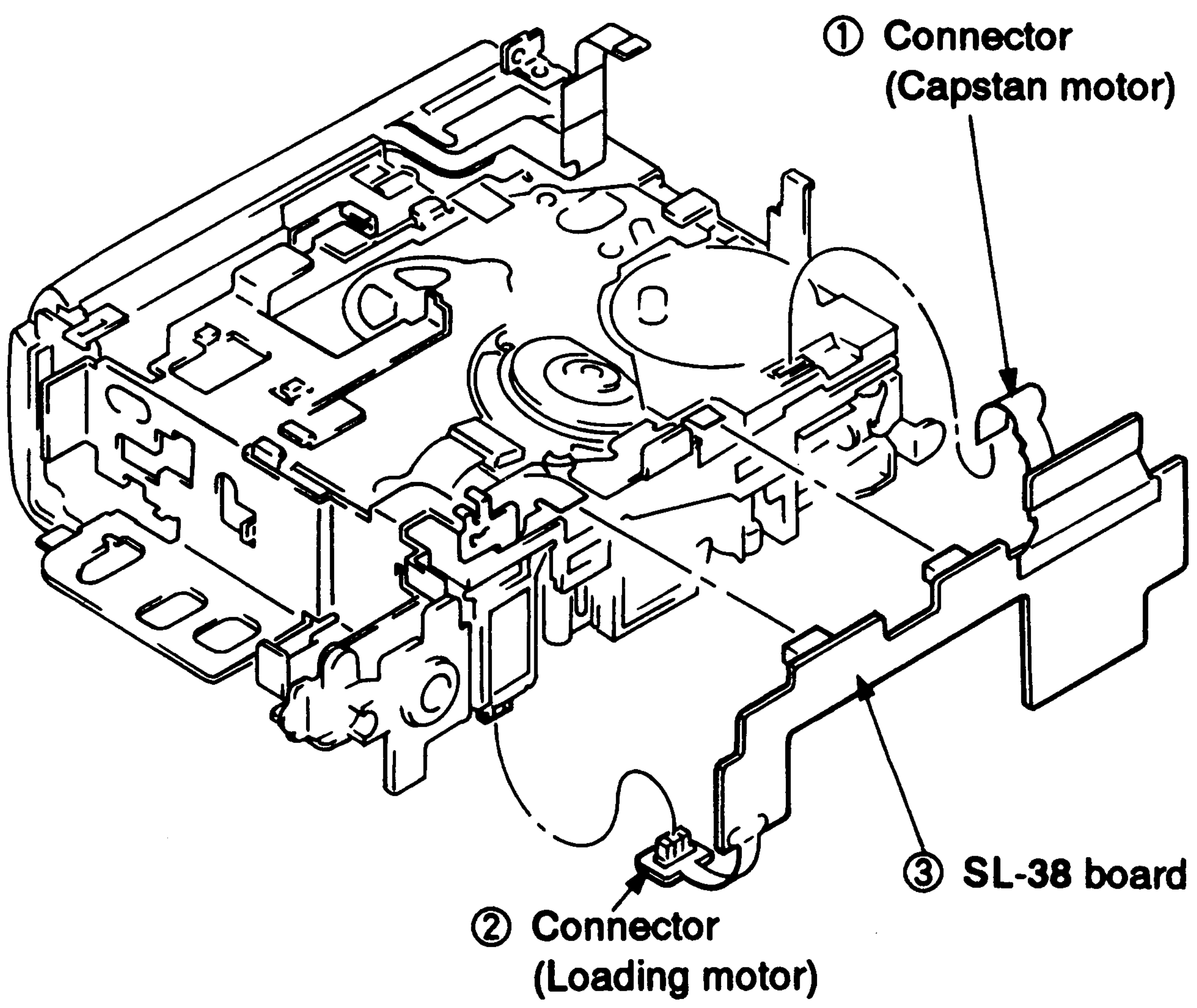


2-10. REMOVAL OF VS-125 BOARD

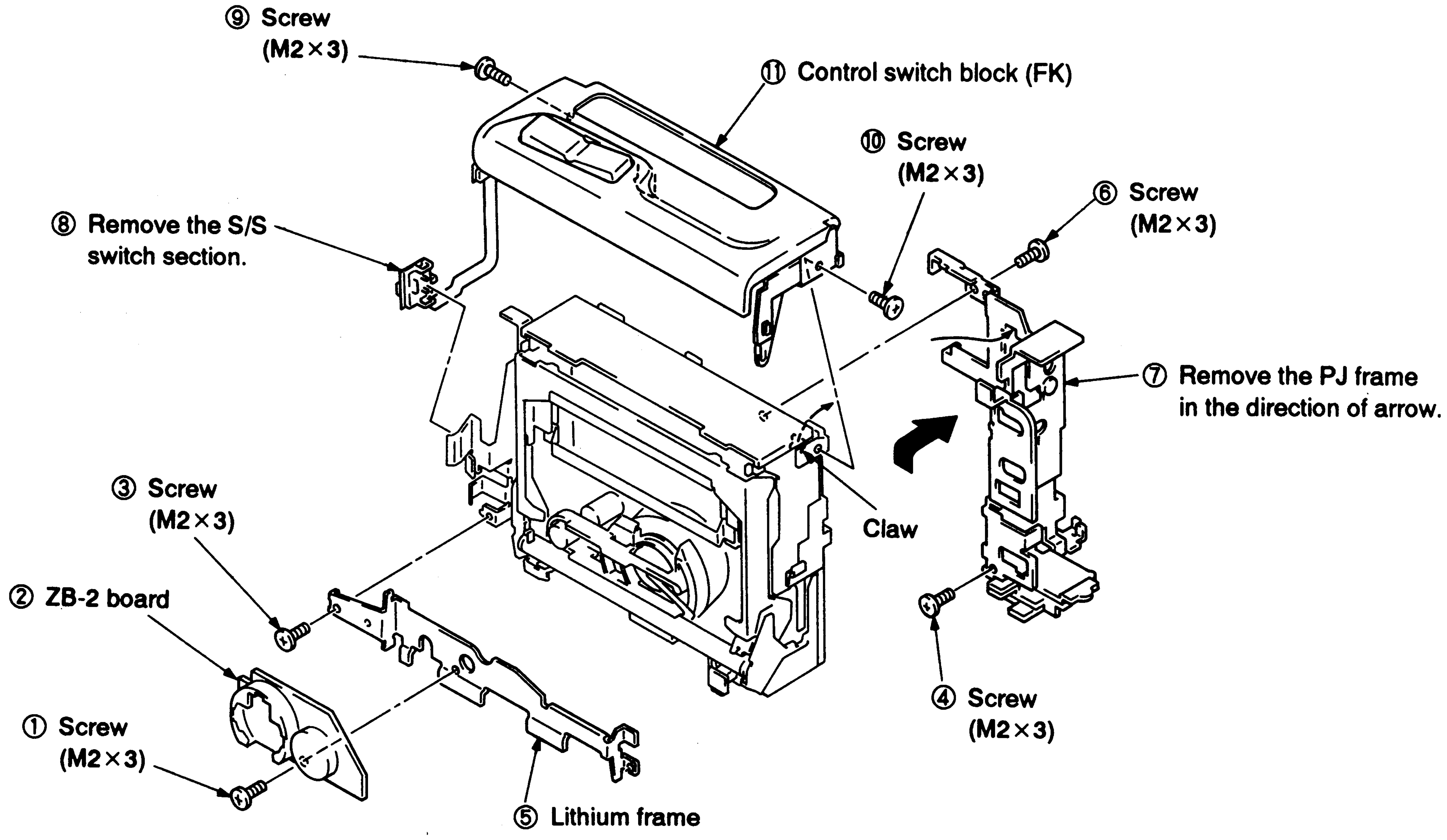


Note: Be sure to check the claw of the shield case catches a hole for installation.

2-11. REMOVAL OF SL-38 BOARD

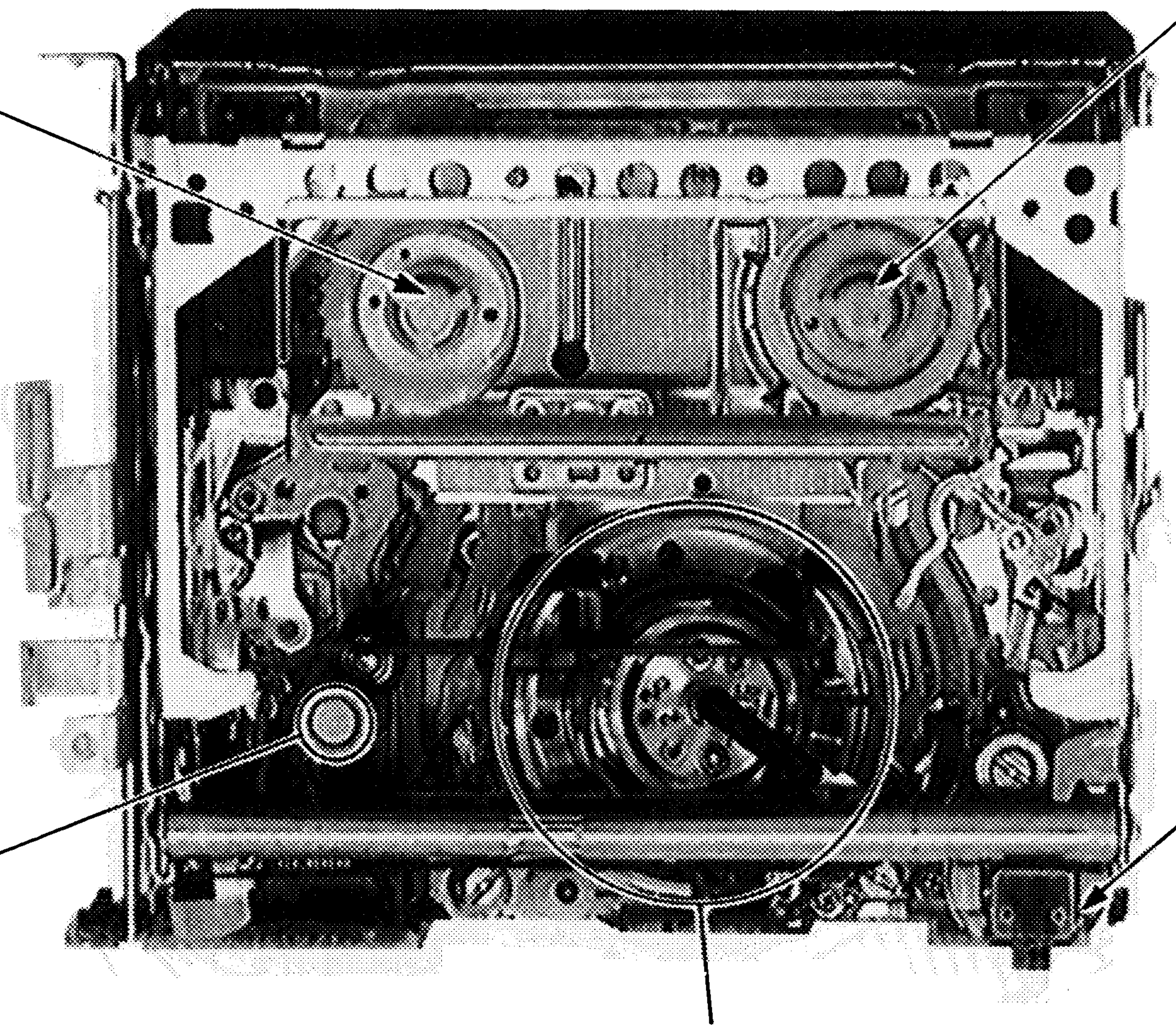


2-12. REMOVAL OF CONTROL SWITCH BLOCK (FK) AND ZB-2 BOARD



2-13. INTERNAL VIEWS

— Left side —



T reel table assembly
X-3941-274-1

S reel table assembly
X-3944-116-1

M903
Loading motor assembly
A-7040-304-A

M902
Capstan motor

M901 (TR36/TR73/TR76/TR83/TR93/TR560/TR670)

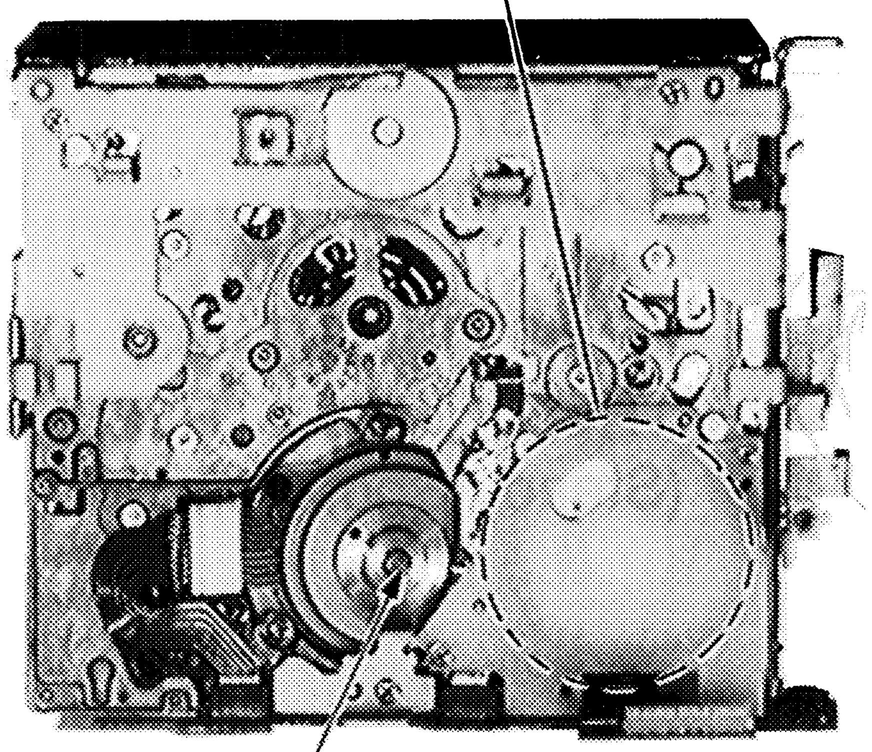
Drum assembly	DGH-78A-R	A-7048-564-A
Upper drum assembly	DGR-78-R	A-7049-501-A

M901 (TR100/TR600/TR880)

Drum assembly	DGH-0B5A-R	A-7048-776-A
Upper drum assembly	DGR-0B5-R	A-7049-651-A

— Right side —

M902
Capstan motor (SCE-0101A)
8-835-477-12

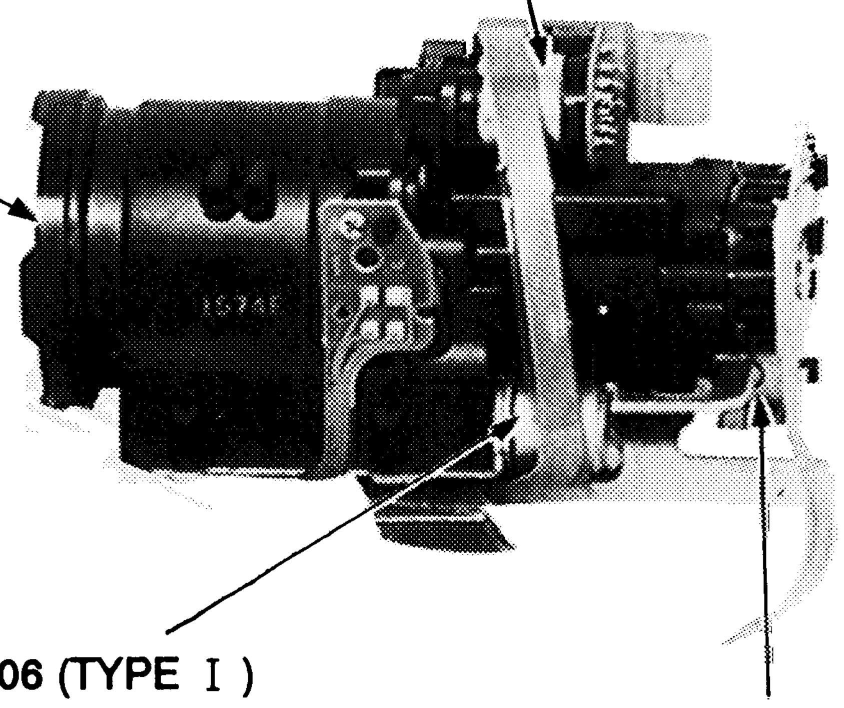


M901
Drum assembly

— Zoom lens —

M907 (TYPE Ⅱ)
IG meter
3-708-888-01
M910 (TYPE Ⅲ)
IRIS assembly
3-708-898-01

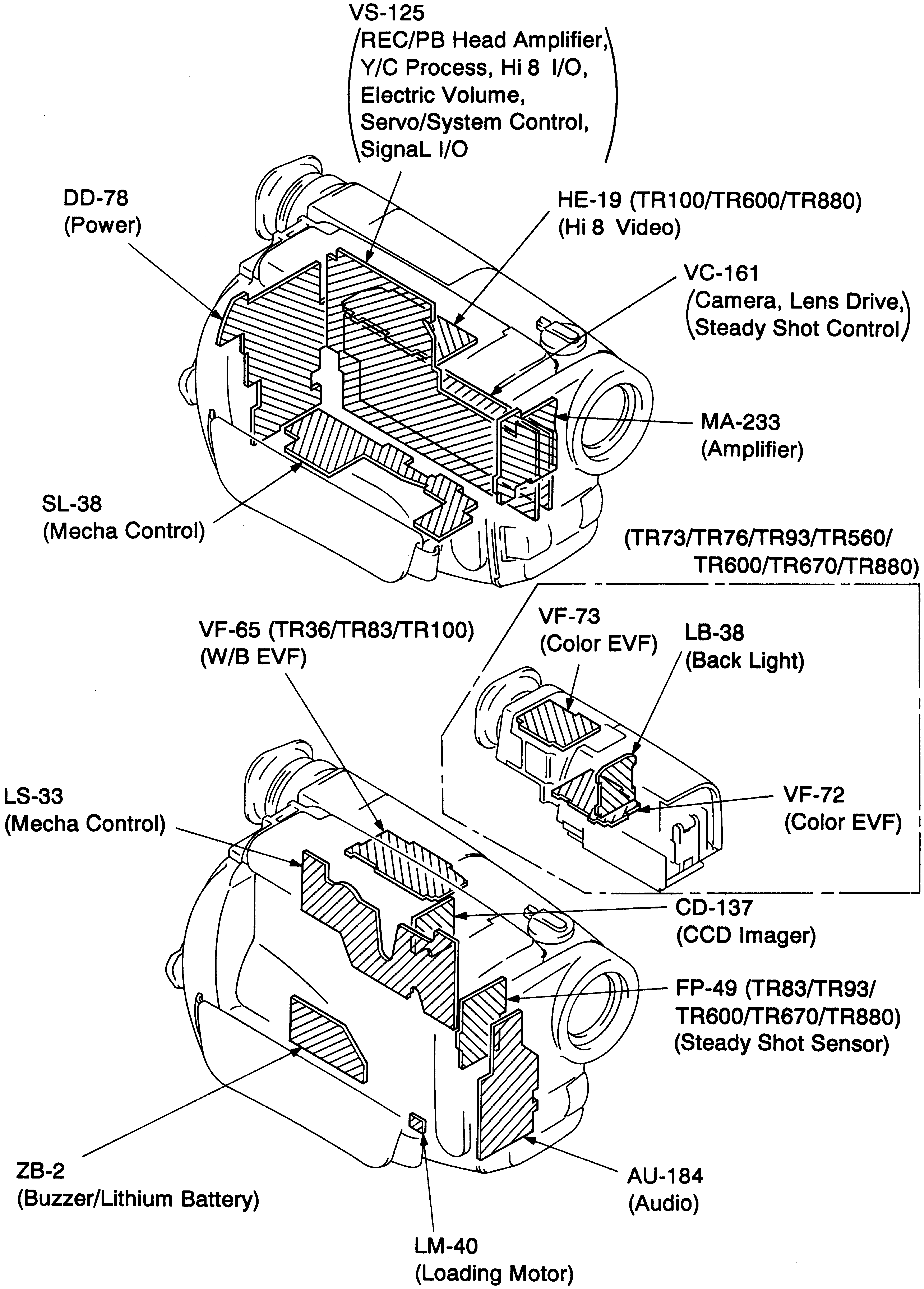
Device lens (LSV-140A) (TYPE Ⅰ)
8-848-704-01
Zoom lens (VCL-5412WA) (TYPE Ⅱ)
1-547-716-11
Zoom lens (VCL-5412WB) (TYPE Ⅲ)
1-547-739-11



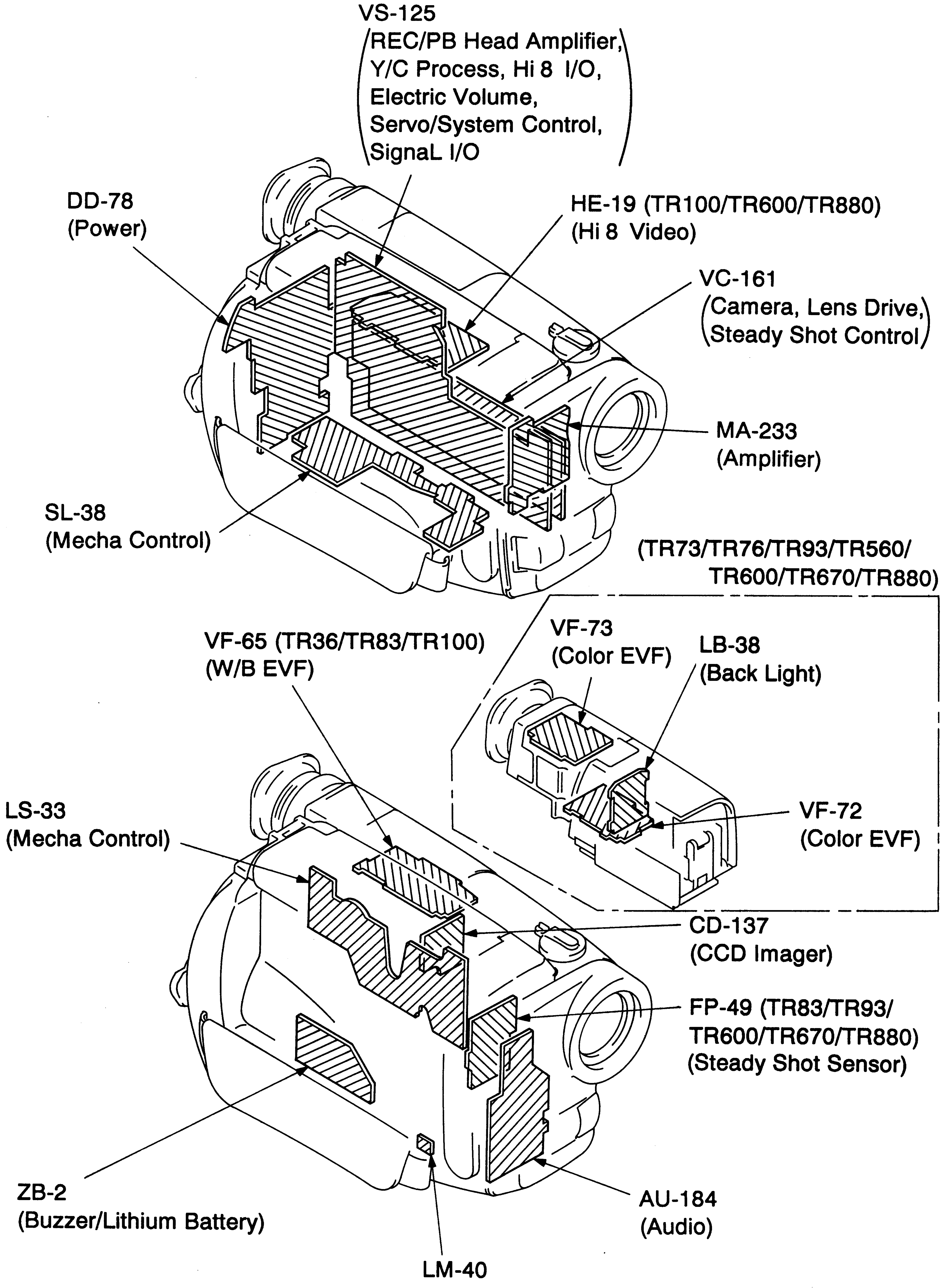
M906 (TYPE Ⅰ)
Zoom motor assembly
1-698-363-01
M909 (TYPE Ⅱ)
Zoom motor assembly
3-708-887-01
M912 (TYPE Ⅲ)
Zoom motor assembly
3-708-896-01

M905 (TYPE Ⅰ)
Focus motor assembly
1-698-364-01
M908 (TYPE Ⅱ)
Focus motor assembly
3-708-889-01
M911 (TYPE Ⅲ)
Focus motor assembly
3-708-897-01

2-14. CIRCUIT BOARDS LOCATION



2-14. CIRCUIT BOARDS LOCATION



SECTION 5
REPAIR PARTS LIST

5-1. EXPLODED VIEWS

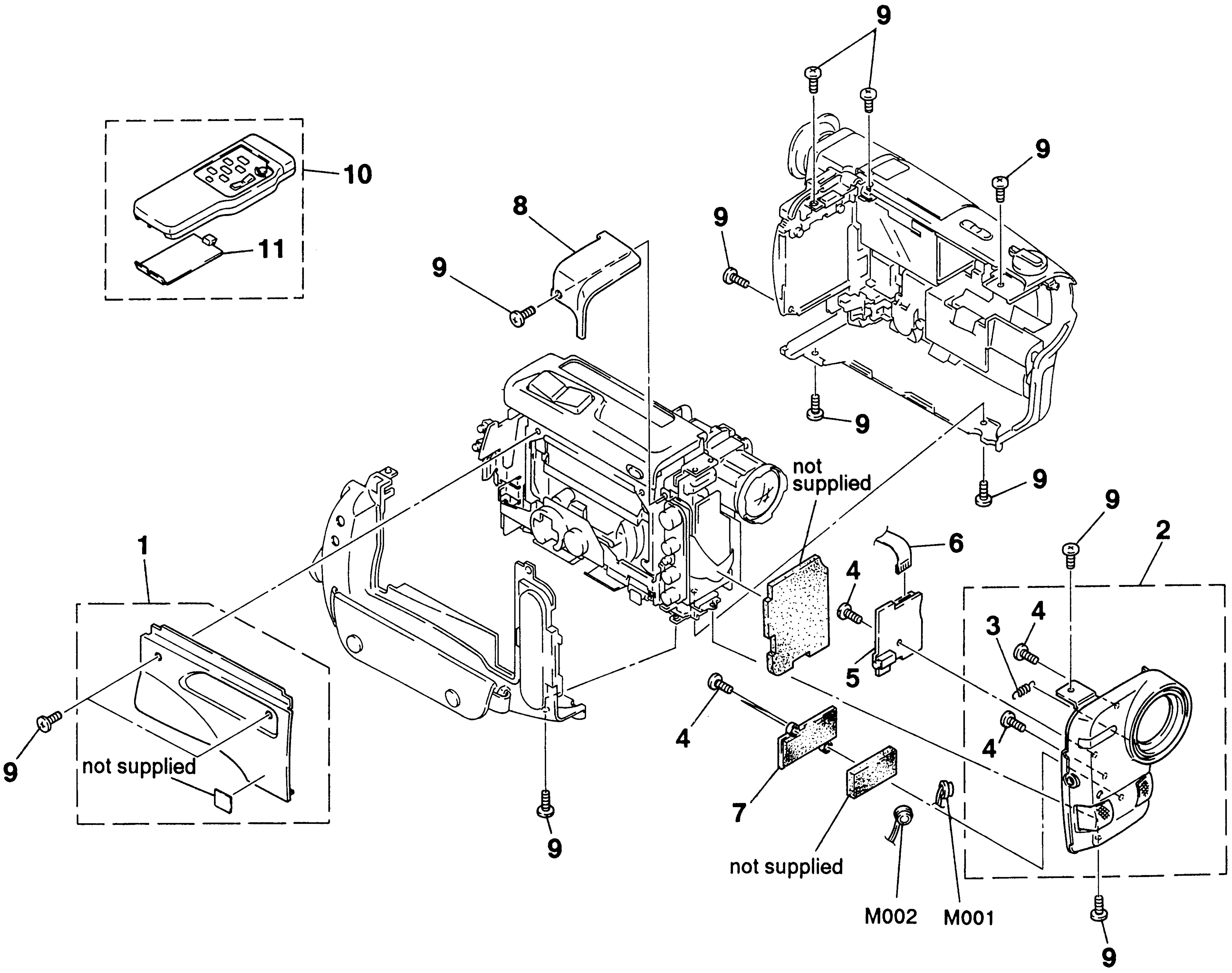
NOTE:

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " ∗ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.
- Canadian model is abbreviated as CND.
Hong Kong model is abbreviated as HK.
Tourist model is abbreviated as JE.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

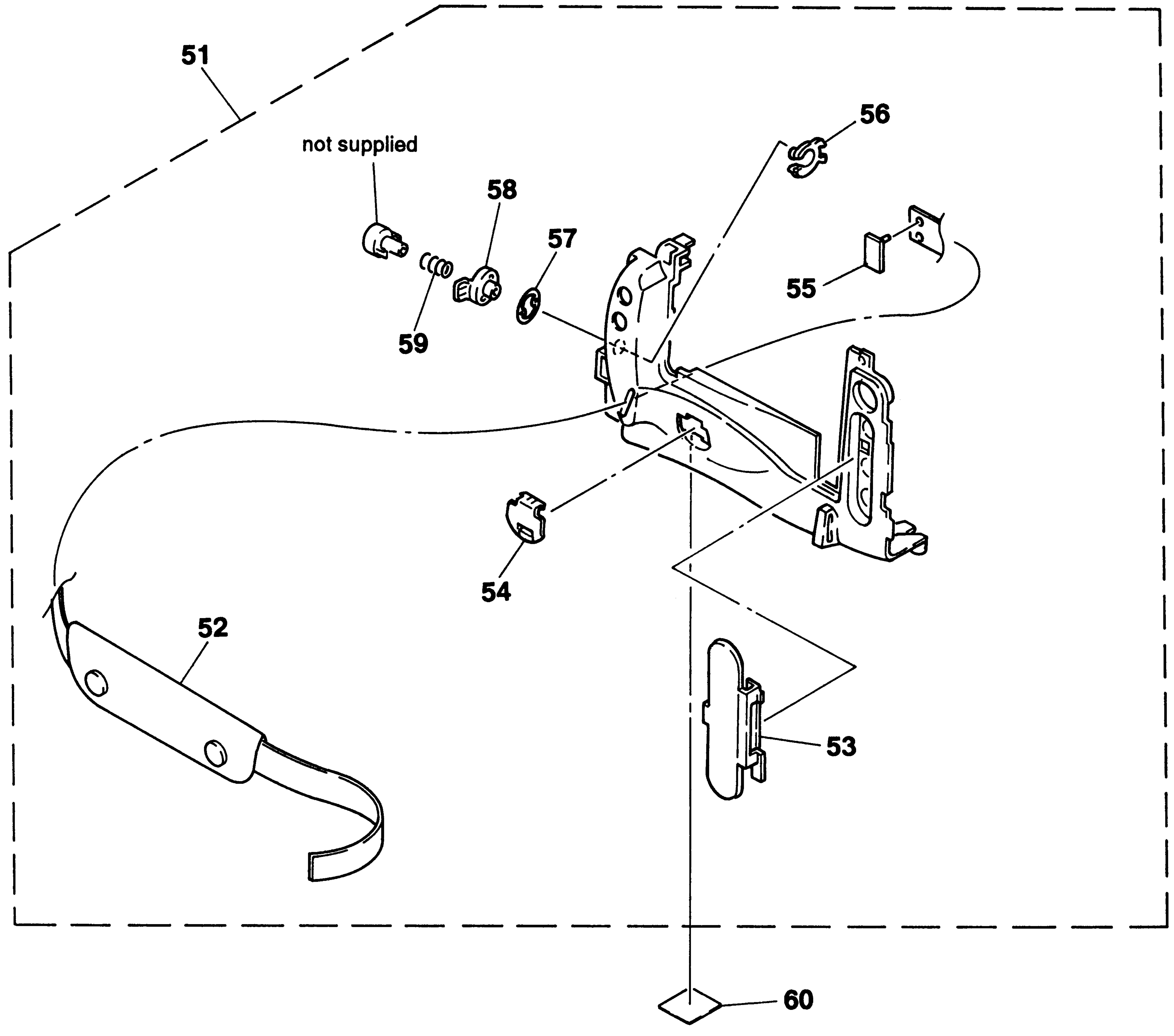
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

5-1-1. FRONT PANEL BLOCK ASSEMBLY



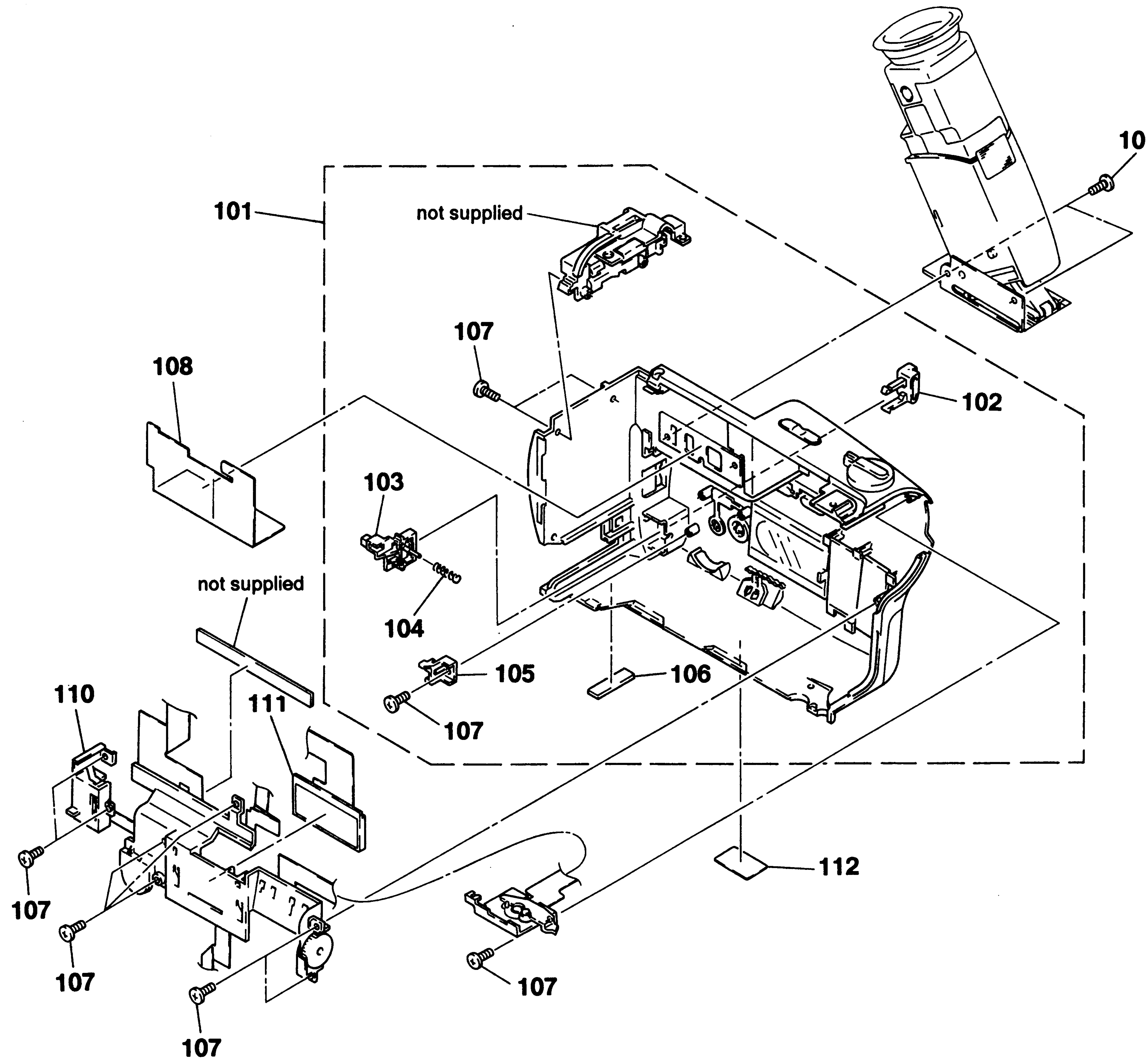
Ref. No.	Part No.	Description	Remark
1	X-3944-936-1	LID ASSY, CASSETTE (TR36/TR73/TR76/TR83/TR93/TR560/TR670)	
1	X-3944-987-1	LID ASSY, CASSETTE (TR100/TR600/TR880)	
2	X-3944-934-1	PANEL ASSY, FRONT (TR83/TR93/TR600)	
2	X-3945-023-1	PANEL ASSY, FRONT (TR100)	
2	X-3945-024-1	PANEL ASSY, FRONT (TR670/TR880)	
2	X-3945-027-1	PANEL ASSY, FRONT (TR36/TR73/TR76/TR560)	
3	3-964-798-01	SPRING, TENSION	
4	3-948-339-01	SCREW, TAPPING	
∗ 5	A-7066-368-A	MA-233 (M) BOARD, COMPLETE	
6	1-769-662-11	CABLE, FLEXIBLE FLAT 11P	
7	X-3944-935-1	HOLDER ASSY, MICROPHONE	
8	3-963-168-01	CAP, FRONT	
9	3-719-381-01	SCREW (M2X4)	
10	1-467-574-71	REMOTE COMMANDER (RMT-708)	
11	3-958-131-01	LID, BATTERY CASE (for RMT-708)	
M001	1-542-259-11	MICROPHONE, CAP (L-CH)	
M002	1-542-259-11	MICROPHONE, CAP (R-CH)	

5-1-2. CABINET (L) BLOCK ASSEMBLY



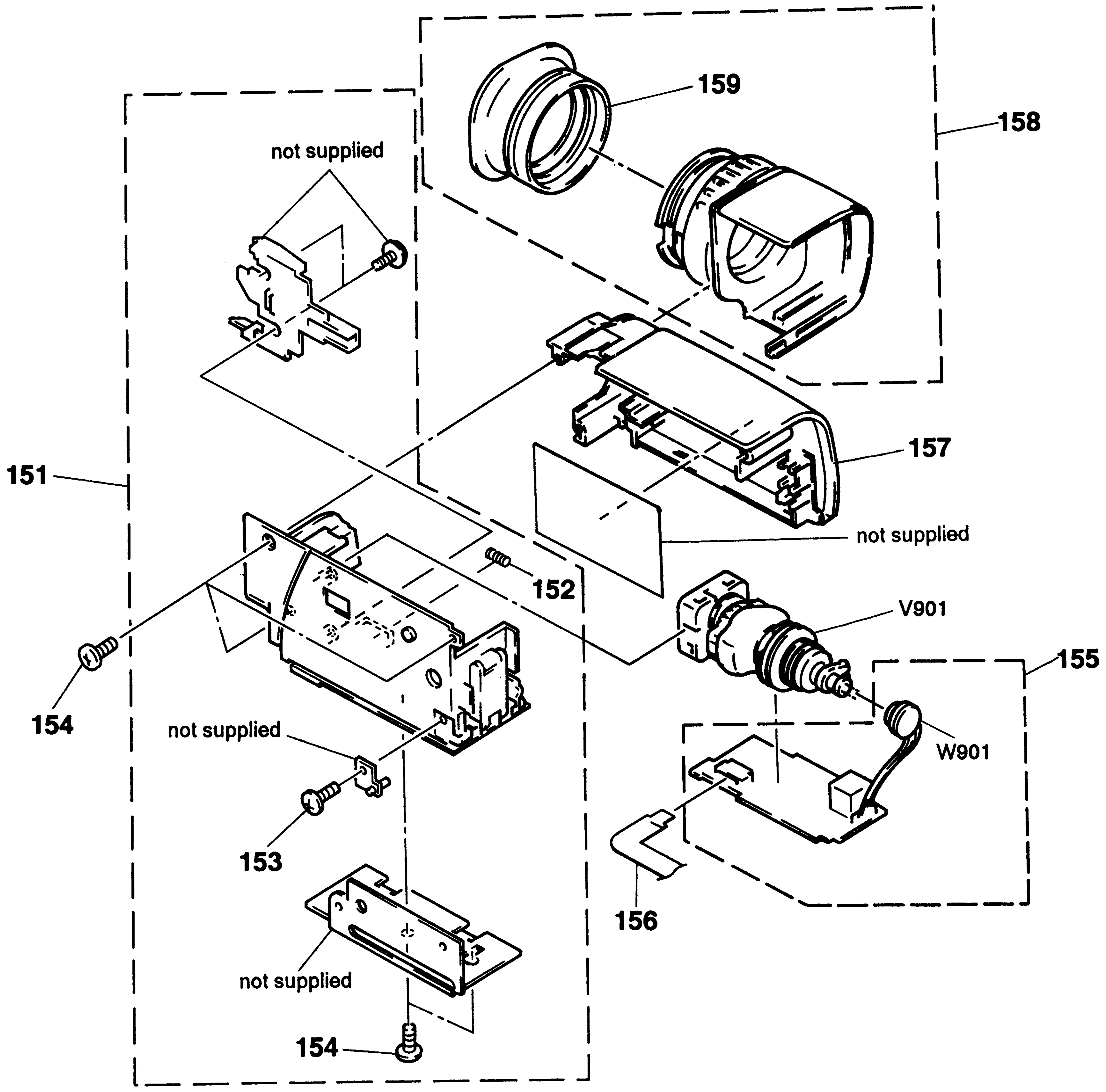
Ref. No.	Part No.	Description	Remark
51	X-3943-923-1	CABINET (L) ASSY	(TR36/TR73/TR76/TR83/TR93/TR560/TR670)
51	X-3944-037-1	CABINET (L) ASSY	(TR100/TR600/TR880)
52	3-736-807-01	BELT, GRIP	
53	3-958-606-02	COVER, JACK	
54	3-958-608-01	LID, LITHIUM POWER	
55	3-942-895-01	STOPPER, BELT	
56	3-942-953-01	HOLDER, STAND-BY KNOB	
57	3-736-364-01	SPRING	
58	3-942-985-01	KNOB, STAND-BY	
59	3-578-221-00	SPRING, COMPRESSION	
60	3-704-256-01	LABEL, CAUTION	(TR73:US/TR76/TR93:US/TR670)
60	3-964-317-01	LABEL, RECYCLE EMC	(TR76:CND/TR93:CND/TR600:CND)

5-1-3. CABINET (R) BLOCK ASSEMBLY



Ref. No.	Part No.	Description	Remark
101	X-3944-933-1	CABINET (R) ASSY (TR83)	
101	X-3945-015-1	CABINET (R) ASSY (TR100)	
101	X-3945-017-1	CABINET (R) ASSY (TR36)	
101	X-3945-019-1	CABINET (R) ASSY (TR93)	
101	X-3945-020-1	CABINET (R) ASSY (TR76)	
101	X-3945-021-1	CABINET (R) ASSY (TR560)	
101	X-3945-022-1	CABINET (R) ASSY (TR73)	
101	X-3945-155-1	CABINET (R) ASSY (TR600)	
101	X-3945-157-1	CABINET (R) ASSY (TR670)	
101	X-3945-158-1	CABINET (R) ASSY (TR880)	
102	3-958-618-01	BUTTON, BATTERY RELEASE	
103	3-958-620-01	CLAW, BATTERY LOCK	
104	3-426-508-00	SPRING, COMPRESSION	
105	3-958-650-01	RETAINER, BATTERY RELEASE	
106	3-949-008-01	SHEET, FOOT	
107	3-948-339-01	SCREW, TAPPING	
* 108	3-963-172-01	SHEET (2), HARNESS	
109	3-719-381-01	SCREW (M2X4)	
110	1-473-173-11	SWITCH BLOCK, CONTROL (CK) (TR83/TR93/TR670)	
110	1-473-173-21	SWITCH BLOCK, CONTROL (CK)(TR600/TR880)	
110	1-473-173-31	SWITCH BLOCK, CONTROL (CK)(TR100)	
110	1-473-173-41	SWITCH BLOCK, CONTROL (CK) (TR36/TR73/TR76/TR560)	
111	1-810-535-12	DISPLAY PANEL, LIQUID CRYSTAL	
112	3-957-897-01	LABEL, FAROUDJA RECYCLE FCC (TR36/TR73/TR76:US/TR83/TR93:US/TR100/TR600:US)	

5-1-4. W/B EVF BLOCK ASSEMBLY (TR36/TR83/TR100)

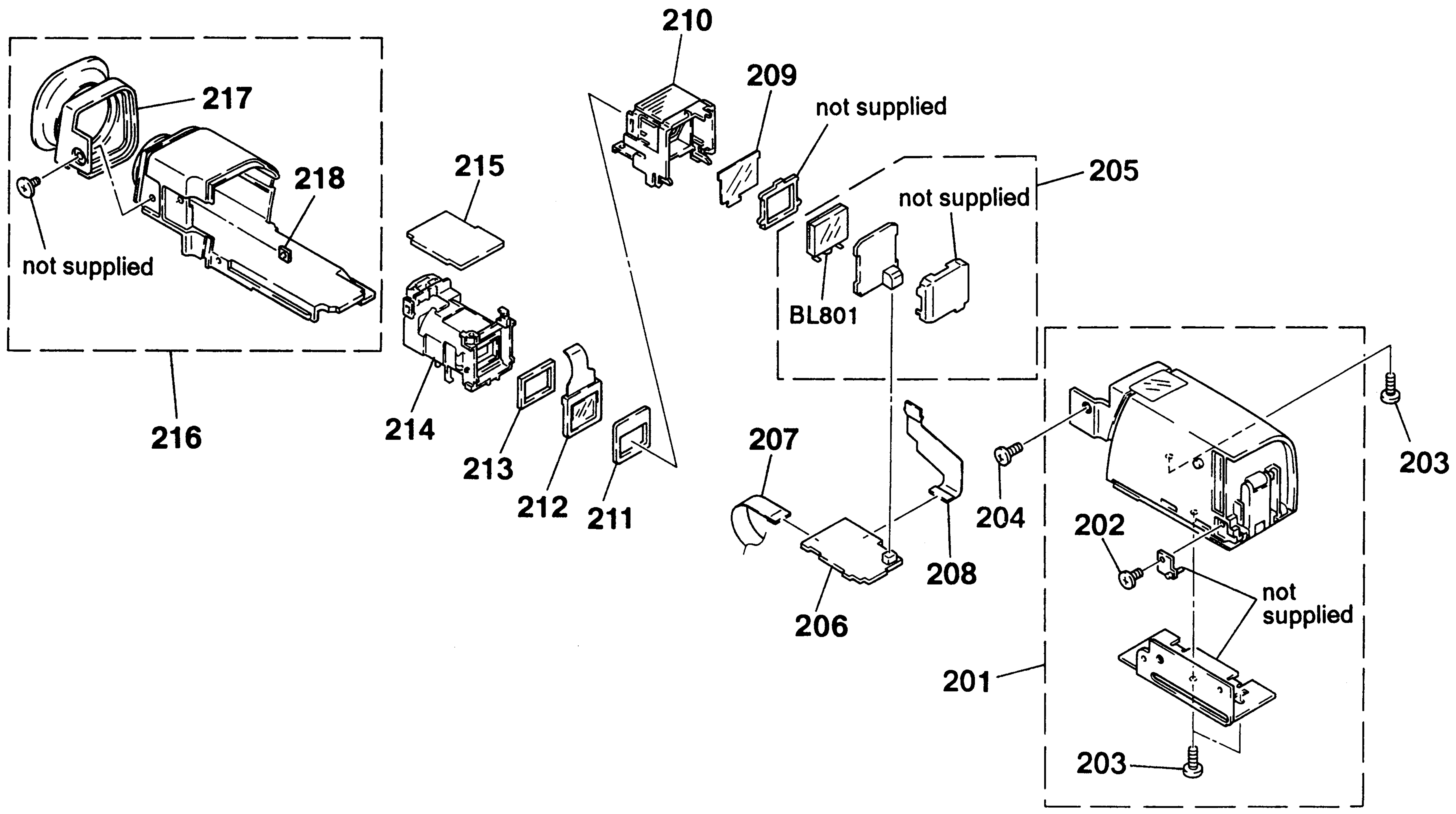


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

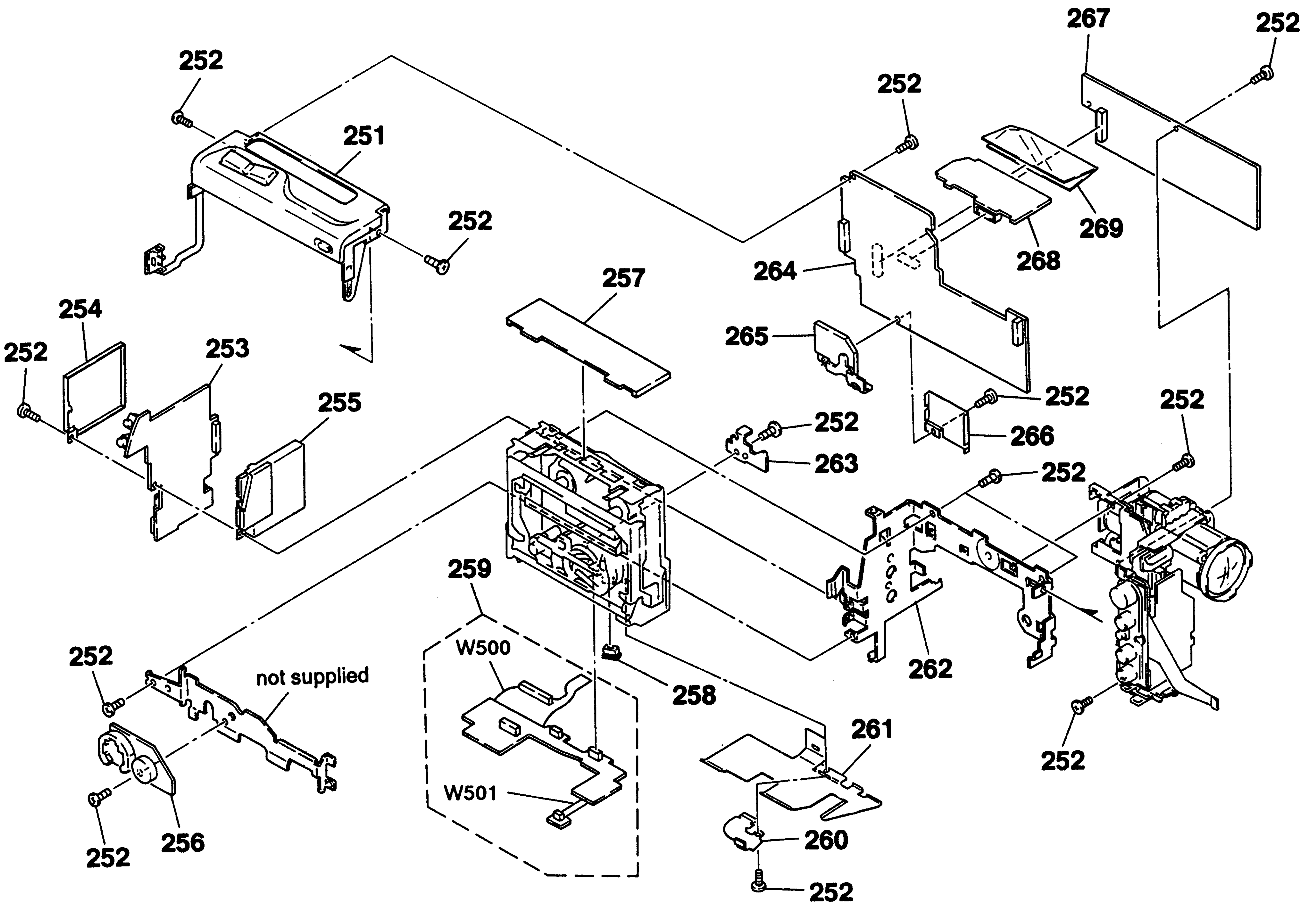
Ref. No.	Part No.	Description	Remark
151	X-3944-937-1	CABINET (L) (B) ASSY, EVF	
152	3-302-492-00	SPRING, COMPRESSION	
153	3-713-791-51	SCREW (M1.7X3.5), TAPPING, P2	
154	3-948-339-01	SCREW, TAPPING	
* 155	A-7063-957-B	VF-65 BOARD, COMPLETE	
156	1-651-894-11	FP-86 FLEXIBLE BOARD	
157	3-963-161-01	CABINET (R)(B), EVF	
158	A-7082-823-A	HOLDER BLOCK ASSY, FINDER	
159	3-963-160-01	EYE CUP (DM)	
⚠V901	1-452-673-31	CRT ASSY (M01KXX90WB)	
⚠W901	1-540-019-21	SOCKET ASSY, CRT	

5-1-5. COLOR EVF BLOCK ASSEMBLY (TR73/TR76/TR93/TR560/TR600/TR670/TR880)



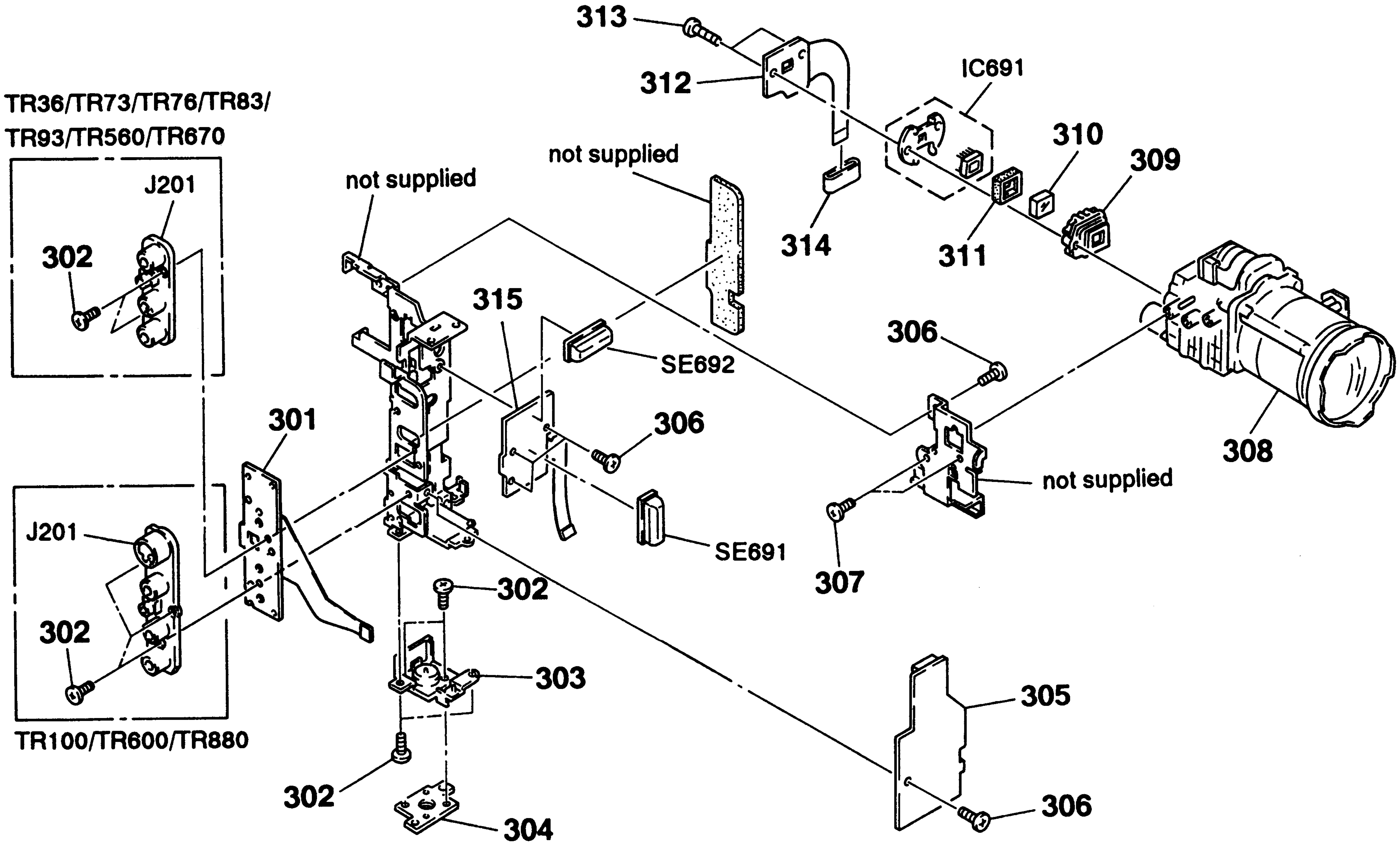
Ref. No.	Part No.	Description	Remark
201	X-3945-012-1	CABINET ASSY, EVF FRONT	
202	3-713-791-51	SCREW (M1.7X3.5), TAPPING, P2	
203	3-948-339-01	SCREW, TAPPING	
204	3-719-381-01	SCREW (M2X4)	
* 205	A-7072-210-A	LB-38 (MC) BOARD, COMPLETE	
* 206	A-7072-211-A	VF-72 (MC) BOARD, COMPLETE	
207	1-656-481-11	FP-292 FLEXIBLE BOARD	
208	1-656-480-11	FP-291 FLEXIBLE BOARD	
* 209	3-960-322-01	PLATE, CONDENSE, BL	
210	X-3945-134-1	HOLDER ASSY, PRISM	
* 211	3-960-347-01	CUSHION (2), LCD	
212	8-753-015-00	LCX005AK-4	
* 213	3-960-302-01	CUSHION (1), LCD	
214	X-3945-014-1	LENS ASSY, VF	
* 215	A-7072-212-A	VF-73 (MC) BOARD, COMPLETE	
216	X-3945-013-1	CABINET ASSY, EVF REAR	
217	3-963-603-01	CUP, EYE	
218	3-718-233-01	NUT, PLATE	
BL801	1-517-325-11	LAMP, FLUORESCENT (0.55 INCH)	

5-1-6. MAIN BOARDS ASSEMBLY



Ref. No.	Part No.	Description	Remark
251	1-473-132-11	SWITCH BLOCK, CONTROL (FK) (TR36/TR73/TR76/TR83/TR93/TR560/TR670)	
251	1-473-132-31	SWITCH BLOCK, CONTROL (FK) (TR100/TR600/TR880)	
252	3-713-786-21	SCREW (M2X3)	
* 253	A-7066-366-A	DD-78 (M) BOARD, COMPLETE (TR36/TR83/TR100)	
* 253	A-7066-404-A	DD-78 (MC) BOARD, COMPLETE (TR73/TR76/TR93/TR560/TR600/TR670/TR880)	
* 254	3-958-925-01	CASE (MAIN), SHIELD, DD	
* 255	3-958-926-01	CASE (LID), SHIELD, DD	
* 256	1-651-920-11	ZB-2 BOARD	
257	3-958-341-01	COVER, LS	
258	1-691-471-11	CONNECTOR, TRANSLATION 11P	
* 259	A-7072-283-A	SL-38 (FD) BOARD, COMPLETE	
260	1-651-891-11	FP-52 FLEXIBLE BOARD (TR36/TR73/TR76/TR83/TR93/TR560/TR670)	
260	1-651-892-11	FP-53 FLEXIBLE BOARD (TR100/TR600/TR880)	
* 261	3-958-928-01	PLATE, SHIELD, RP	
* 262	3-958-345-01	FRAME (U)	
* 263	3-958-667-01	FRAME (B)	
* 264	A-7066-365-A	VS-125 (M) BOARD, COMPLETE (TR83)	
* 264	A-7066-403-A	VS-125 (MC) BOARD, COMPLETE (TR93/TR670)	
* 264	A-7066-406-A	VS-125 (HL) BOARD, COMPLETE (TR100)	
* 264	A-7066-409-A	VS-125 (LC) BOARD, COMPLETE (TR73/TR76/TR560)	
* 264	A-7066-419-A	VS-125 (L) BOARD, COMPLETE (TR36)	
* 264	A-7066-482-A	VS-125 (HC) BOARD, COMPLETE(TR600/TR880)	
* 265	X-3943-976-1	SHIELD (MAIN) ASSY, RP	
* 266	3-958-924-01	CASE (LID), SHIELD, RP	
* 267	A-7066-367-A	VC-161 (M) BOARD, COMPLETE (TR83)	
* 267	A-7066-405-A	VC-161 (MC) BOARD, COMPLETE (TR93/TR600/TR670/TR880)	
* 267	A-7066-407-A	VC-161 (HL) BOARD, COMPLETE (TR100)	
* 267	A-7066-410-A	VC-161 (LC) BOARD, COMPLETE (TR73/TR76/TR560)	
* 267	A-7066-420-A	VC-161 (L) BOARD, COMPLETE (TR36)	
* 268	A-7066-408-A	HE-19 (HL) BOARD, COMPLETE (TR100/TR600/TR880)	
* 269	3-963-171-01	SHEET, HE (TR100/TR600/TR880)	
W500	1-651-889-11	FP-48 FLEXIBLE BOARD	
W501	1-642-186-11	FP-437 FLEXIBLE BOARD	

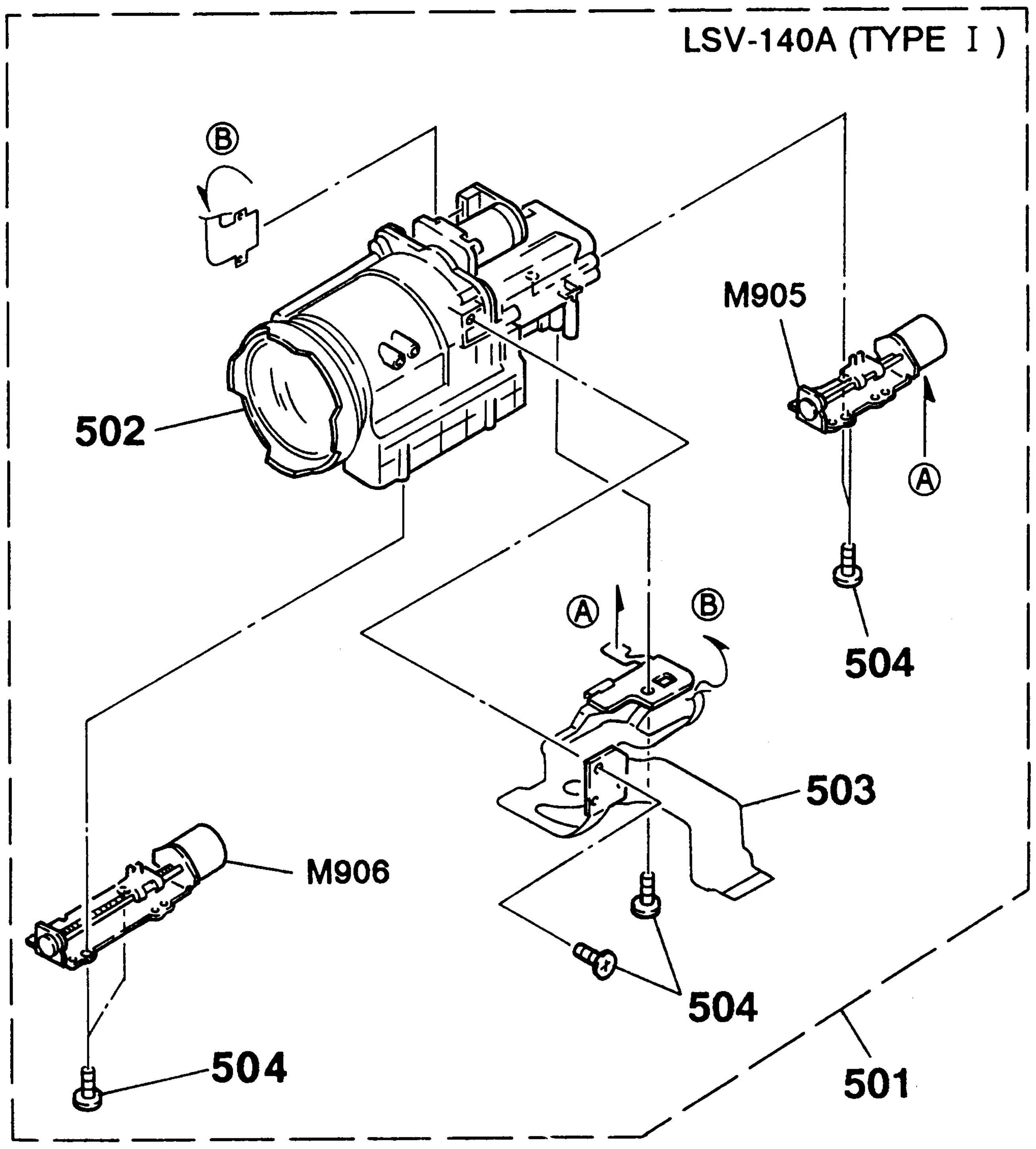
5-1-7. CCD BLOCK ASSEMBLY

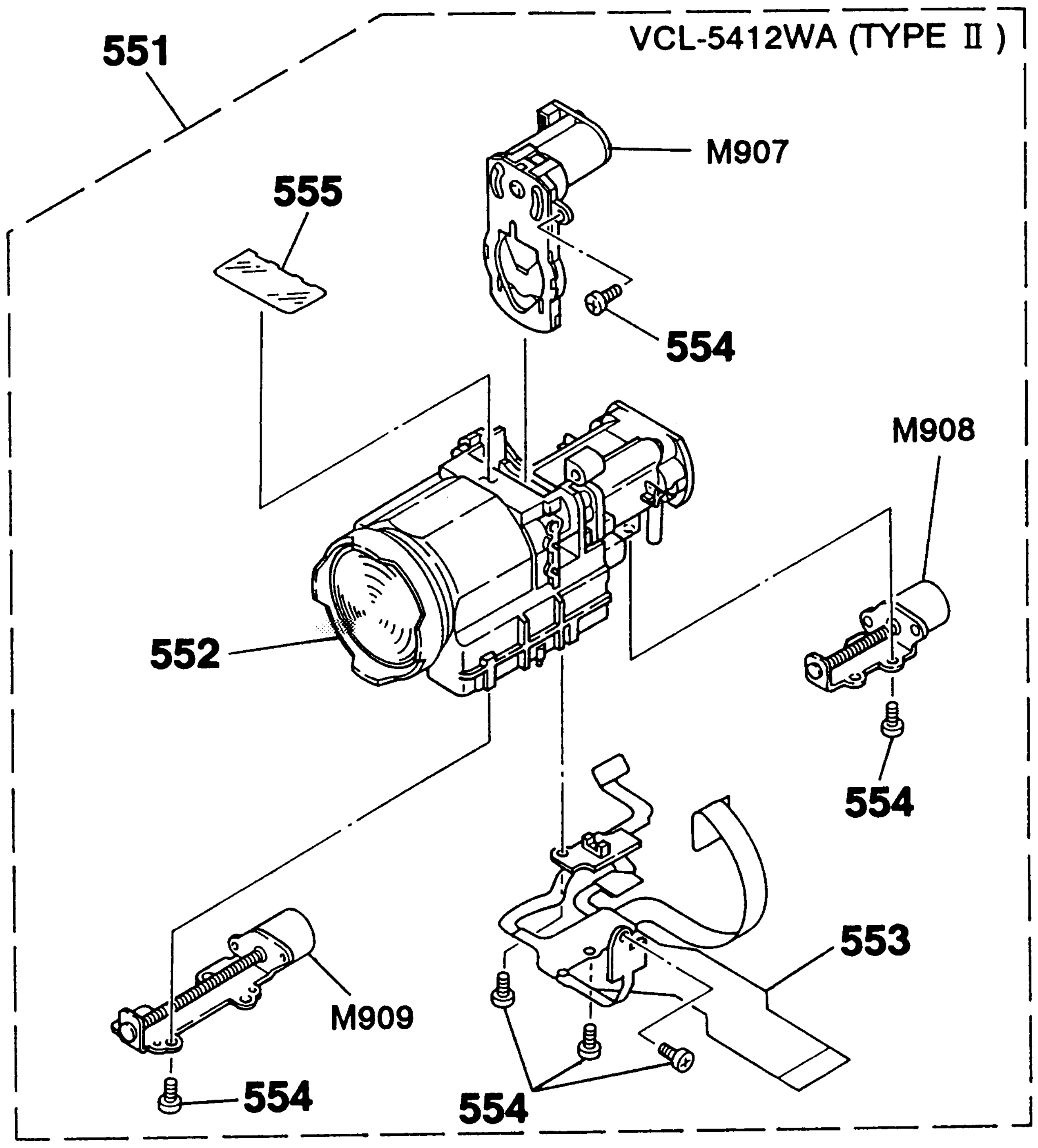


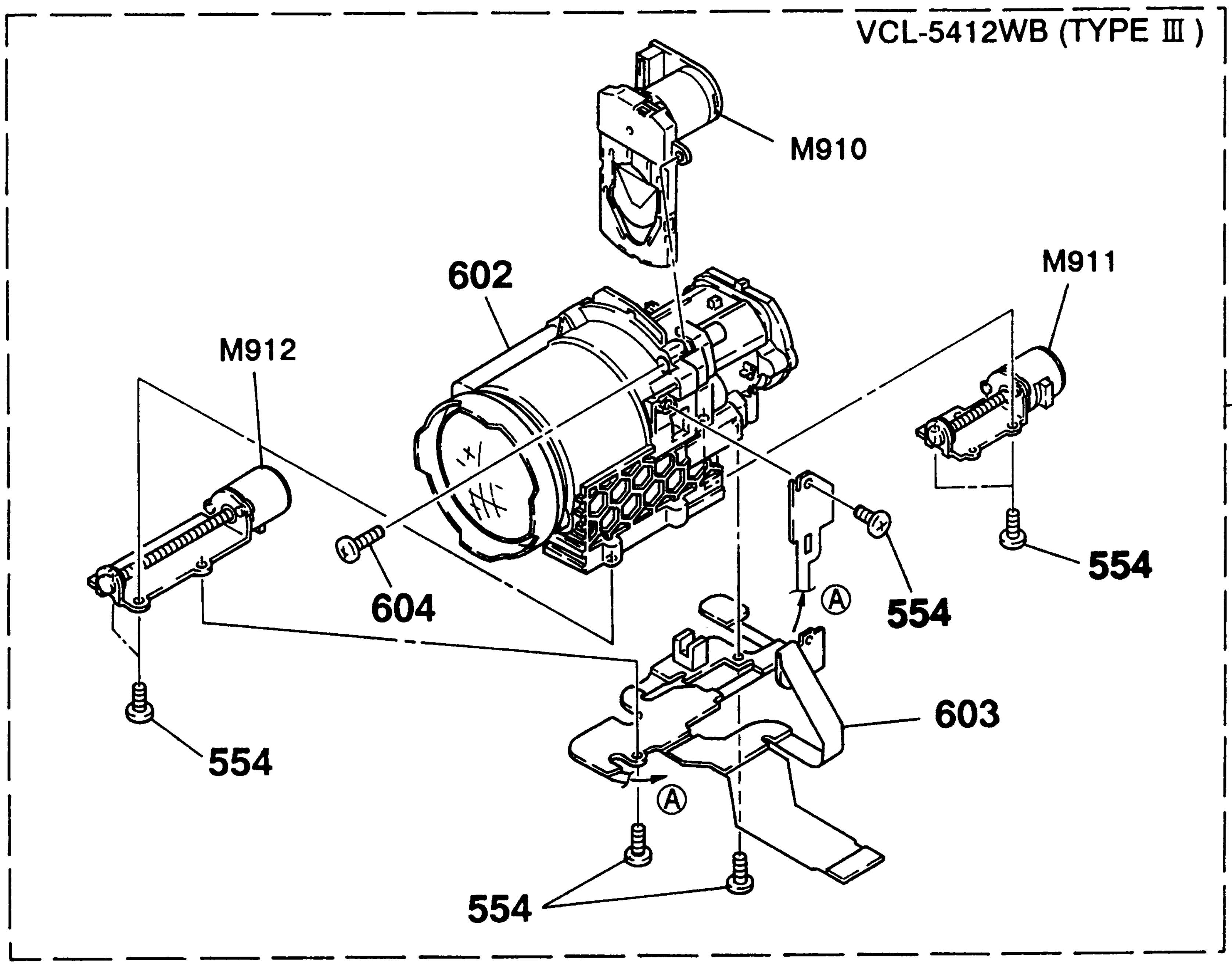
Be sure to read "Note on the CCD Imager replacement" on page 4-6 when changing the CCD imager.

Ref. No.	Part No.	Description	Remark
301	1-657-049-11	FP-44 FLEXIBLE BOARD	
302	3-719-381-01	SCREW (M2X4)	
303	3-958-310-11	HOLDER, TRIPOD	
304	3-958-286-01	SHEET METAL, TRIPOD	
* 305	A-7066-364-A	AU-184 (M) BOARD, COMPLETE	
306	3-713-786-21	SCREW (M2X3)	
307	3-948-339-01	SCREW, TAPPING	
308	1-547-716-11	LENS, ZOOM (VCL-5412WA)(TYPE II)	
308	1-547-739-11	LENS, ZOOM (VCL-5412WB)(TYPE III)	
308	8-848-704-01	DEVICE, LENS LSV-140A (TYPE I)	
309	3-946-856-01	ADAPTOR (H), CCD FITTING	
310	1-547-558-21	FILTER BLOCK, OPTICAL (TR36/TR73/TR76/TR560)	
310	1-547-735-51	FILTER BLOCK, OPTICAL (TR83/TR93/TR100/TR600/TR670/TR880)	
311	3-946-857-01	RUBBER (S), SEAL (TR36/TR73/TR76/TR560)	
311	3-960-149-01	RUBBER (3), SEAL (TR83/TR93/TR100/TR600/TR670/TR880)	
* 312	A-7072-134-A	CD-137 A BOARD, COMPLETE (TR83/TR93/TR100/TR600/TR670/TR880)	
* 312	A-7072-135-A	CD-137 B BOARD, COMPLETE (TR36/TR73/TR76/TR560)	
313	3-947-268-01	SCREW (P TIGHT)(2), TAPPING, +B	
314	1-500-227-21	BEAD, FERRITE	
315	1-651-890-11	FP-49 FLEXIBLE BOARD (TR83/TR93/TR600/TR670/TR880)	
IC691	A-7030-368-A	CCD BLOCK ASSY (054 SERVICE) (CCD IMAGER)(TR36/TR73/TR76/TR560)	
IC691	A-7030-370-A	CCD BLOCK ASSY (058 SERVICE) (CCD IMAGER)(TR100)	
IC691	A-7030-373-A	CCD BLOCK ASSY (059V SERVICE) (CCD IMAGER)(TR83/TR93/TR600/TR670/TR880)	
J201	1-537-373-51	JACK BOARD ASSY (TR100/TR600/TR880)	
J201	1-537-415-11	TERMINAL BOARD (TR36/TR73/TR76/TR83/TR93/TR560/TR670)	
SE691	1-810-725-31	SENSOR, ANGULAR VELOCITY (PITCH) (TR83/TR93/TR600/TR670/TR880)	
SE692	1-810-725-41	SENSOR, ANGULAR VELOCITY (YAW) (TR83/TR93/TR600/TR670/TR880)	

5-1-8. ZOOM LENS ASSEMBLIES (LSV-140A) (VCL-5412WA) (VCL-5412WB)

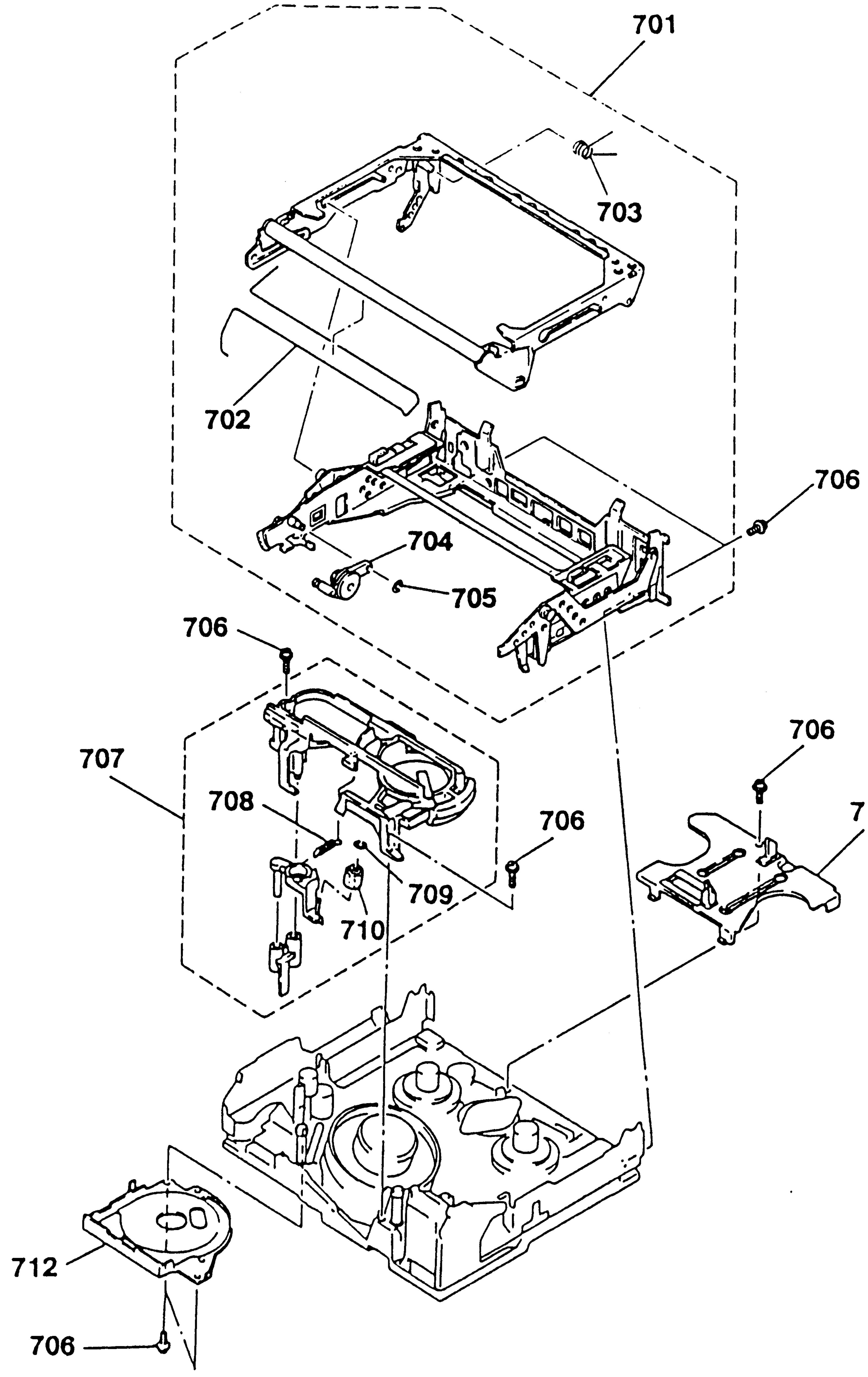






Ref.No.	Part No.	Description	Remark
501	8-848-704-01	DEVICE, LENS LSV-140A (TYPE I)	
502	A-4910-598-A	DEVICE ASSY, LSV-140A (RP)	
503	A-4915-338-A	FLEXIBLE MOUNT	
504	3-713-791-41	SCREW (M1.7X5), TAPPING, P2	
M905	1-698-364-01	MOTOR ASSY, FOCUS	
M906	1-698-363-01	MOTOR ASSY, ZOOM	
551	1-547-716-11	LENS, ZOOM (VCL-5412WA)(TYPE II)	
552	3-708-891-01	TUBE, MIRROR ASSY	
553	3-708-890-01	FLEXIBLE, MAIN	
554	3-708-302-01	SCREW (BT3 P1.7X4C)	
555	3-708-886-01	COVER, IG	
M907	3-708-888-01	METER, IG (IRIS)	
M908	3-708-889-01	MOTOR ASSY, FOCUS	
M909	3-708-887-01	MOTOR ASSY, ZOOM	
601	1-547-739-11	LENS, ZOOM (VCL-5412WB)(TYPE III)	
602	3-708-900-01	TUBE, MIRROR ASSY	
603	3-708-899-01	PC BOARD ASSY, FLEXIBLE	
604	3-708-617-01	SCREW (BT3 P1.7X7C)	
M910	3-708-898-01	IRIS ASSY	
M911	3-708-897-01	MOTOR ASSY, FOCUS	
M912	3-708-896-01	MOTOR ASSY, ZOOM	

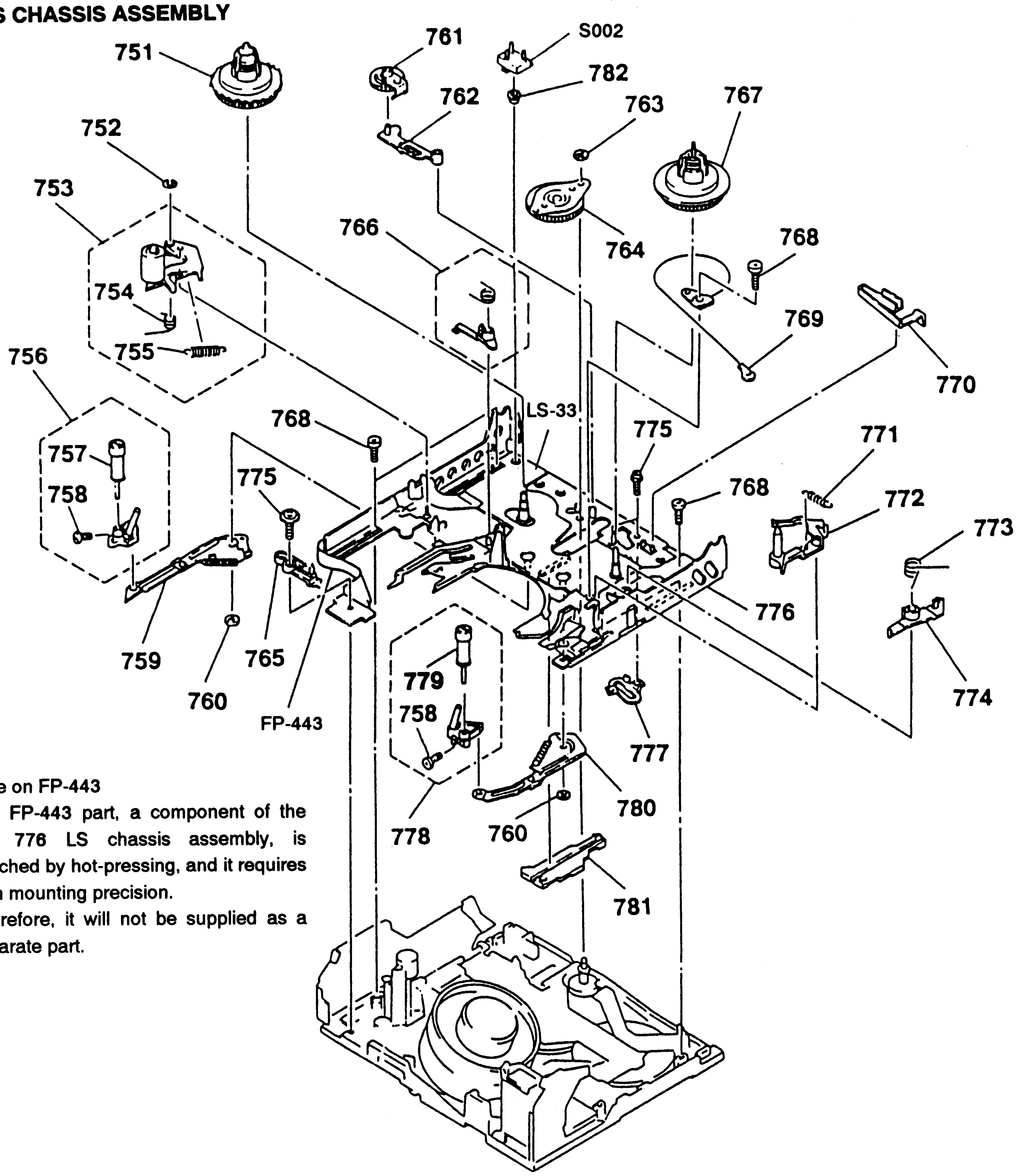
5-1-9. CASSETTE COMPARTMENT ASSEMBLY



Ref. No.	Part No.	Description	Remark
701	A-7040-312-K	CASSETTE COMPARTMENT BLOCK ASSY	
702	3-945-773-01	BAR, TORSION	
703	3-945-771-01	SPRING, TORSION	
704	X-3941-287-2	DAMPER ASSY	
705	3-315-384-31	WASHER, STOPPER	
706	3-947-503-01	SCREW (M1.4X2.5)	

Ref. No.	Part No.	Description	Remark
707	A-7040-309-A	PROTECT (BASE) BLOCK ASSY	
708	3-945-760-01	SPRING, TENSION	
709	3-321-393-01	WASHER, STOPPER	
710	X-3944-886-1	ROLLER ASSY, HC	
711	X-3941-280-1	RETAINER ASSY, GOOSENECK	
712	3-945-733-01	COVER, CAPSTAN	

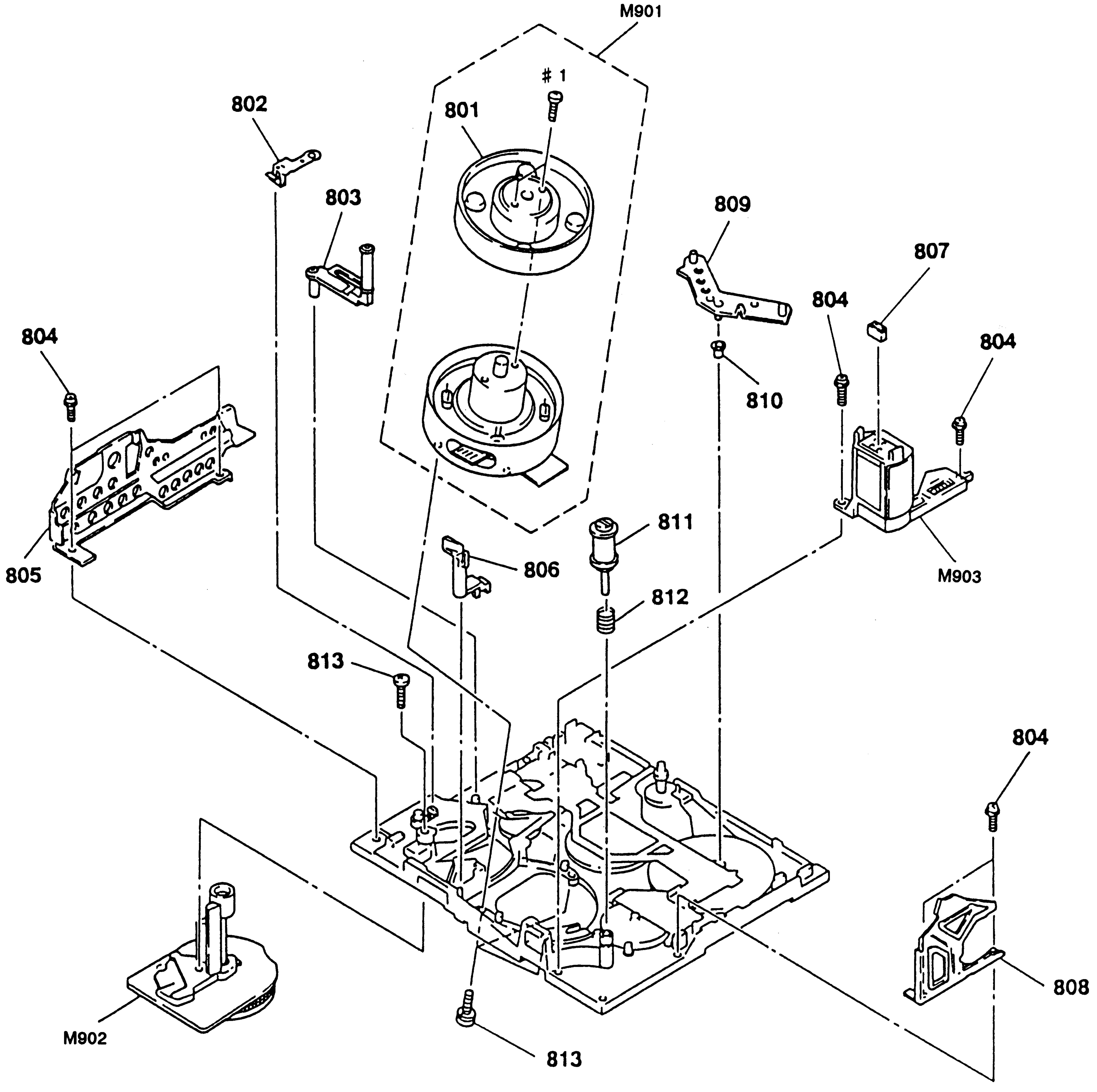
5-1-10. LS CHASSIS ASSEMBLY



Note on FP-443
The FP-443 part, a component of the No. 776 LS chassis assembly, is attached by hot-pressing, and it requires high mounting precision.
Therefore, it will not be supplied as a separate part.

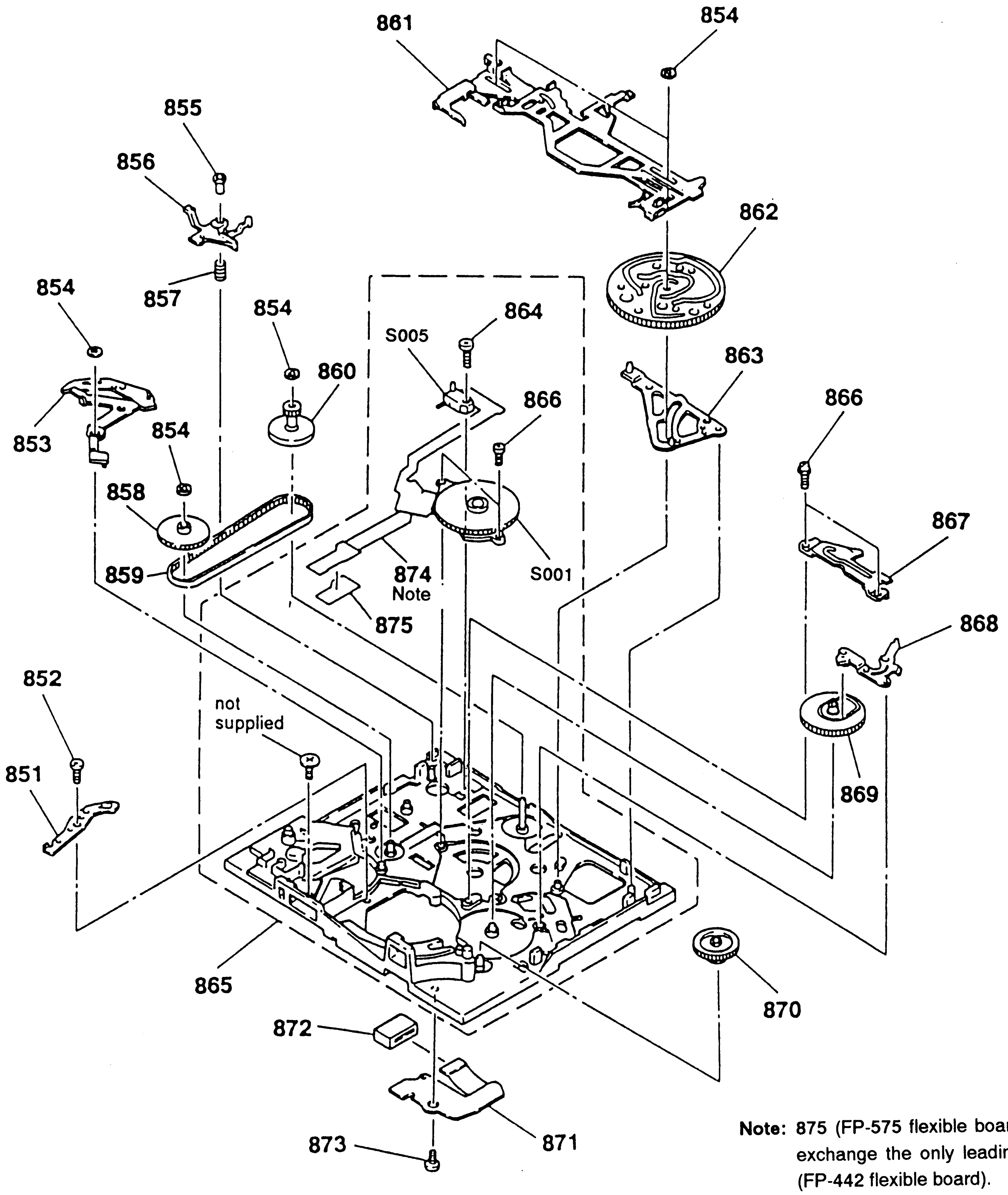
Ref. No.	Part No.	Description	Remark
751	X-3941-274-1	TABLE ASSY, REEL, T	
752	3-331-007-21	WASHER	
753	X-3941-271-5	ARM ASSY, PINCH	
754	3-945-743-01	SPRING, TORSION	
755	3-945-783-01	SPRING, TENSION	
756	A-7040-307-A	GUIDE (BASE)(T) BLOCK ASSY	
757	X-3941-424-1	ROLLER ASSY, TG6	
758	3-947-504-01	SCREW (M1.2X2)	
759	X-3941-267-1	ARM (T) ASSY, GUIDE	
760	3-669-465-01	WASHER (1.5), STOPPER	
761	X-3941-273-1	SOFT ASSY, T	
762	3-945-753-01	ARM, T SOFT	
763	3-726-829-01	WASHER, STOPPER	
764	X-3941-279-5	GEAR ASSY, GOOSENECK	
765	3-947-644-01	RETAINER, TG5 (BASE)	
766	A-7040-321-A	CLAW BLOCK ASSY, T HARD	
767	X-3944-116-1	TABLE ASSY, S REEL	
768	3-945-756-01	SCREW (M1.4X3)	
769	X-3941-277-1	STRING BLOCK ASSY	
770	3-945-801-01	BRAKE, S SOFT	
771	3-954-327-01	SPRING, TENSION	
772	X-3941-276-1	TG1 ASSY	
773	3-945-752-01	SPRING, TORSION	
774	3-945-799-01	BRAKE, S HARD	
775	3-947-503-01	SCREW (M1.4X2.5)	
776	X-3943-307-1	CHASSIS ASSY, LS	
777	3-945-784-01	PLATE, CAM, LS	
778	A-7040-323-A	GUIDE (BASE)(S) BLOCK ASSY	
779	X-3944-648-1	ROLLER ASSY (3), TG3	
780	X-3941-266-1	ARM (S) ASSY, GUIDE	
781	3-945-837-01	SLIDER, GL	
782	3-949-881-01	SLEEVE	
S002	1-572-987-11	SWITCH, PUSH (3 KEY) (REC PROOF, ME/MP, MP/MP-HG)	

5-1-11. MECHANISM CHASSIS ASSEMBLY (1)



Ref. No.	Part No.	Description	Remark
801	A-7049-501-A	DRUM ASSY, UPPER (DGR-78-R) (TR36/TR73/TR76/TR83/TR93/TR560/TR670)	
801	A-7049-651-A	DRUM ASSY, UPPER (DGR-0B5-R) (TR100/TR600/TR880)	
802	3-945-822-01	SPRING, LEAF, TG7 ARM	
803	A-7040-305-A	ARM BLOCK ASSY, TG7	
804	3-947-503-01	SCREW (M1.4X2.5)	
805	X-3941-255-1	PLATE (T) ASSY, SIDE	
806	3-945-735-01	ARM, HC CONVERSION	
807	1-568-323-11	CONNECTOR, BOARD TO BOARD 4P	
808	3-945-691-01	PLATE (S), SIDE	
809	3-945-701-01	ARM, LS	
810	3-945-702-01	ROLLER, LS	
811	X-3942-193-1	ROLLER ASSY (2), TG2	
812	3-956-651-01	SPRING, COMPRESSION	
813	3-686-493-01	SCREW (M2X5), P1	
M901	A-7048-564-A	DRUM ASSY (DGH-78A-R) (TR36/TR73/TR76/TR83/TR93/TR560/TR670)	
M901	A-7048-776-A	DRUM ASSY (DGH-0B5A-R) (TR100/TR600/TR880)	
M902	8-835-477-12	MOTOR, DC SCE-0101A (CAPSTAN)	
M903	A-7040-304-A	MOTOR BLOCK ASSY, LM (LOADING)	

5-1-12. MECHANISM CHASSIS ASSEMBLY (2)



Note: 875 (FP-575 flexible board) is part that exchange the only leading part of **874** (FP-442 flexible board).

Ref. No.	Part No.	Description	Remark
851	3-945-734-01	ARM, HC DRIVING	
852	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD	
853	X-3941-259-1	ARM ASSY, PINCH PRESS	
854	3-726-829-01	WASHER, STOPPER	
855	3-945-730-01	SLEEVE, EJECT	
856	3-945-706-01	LEVER, EJECT	
857	3-945-729-01	SPRING, COMPRESSION	
858	X-3941-256-1	GEAR ASSY, CHANGE	
859	3-944-539-01	BELT, RELAY	
860	3-945-695-01	PULLEY, RELAY	
861	X-3941-260-1	SLIDER ASSY, M	
862	3-945-696-02	CAM	
863	X-3941-258-3	ARM ASSY, GL	
864	3-713-786-71	SCREW (M2X5)	
865	A-7040-303-A	CHASSIS ASSY, MECHANICAL	
866	3-947-503-01	SCREW (M1.4X2.5)	
867	3-945-722-01	RETAINER, GEAR	
868	X-3941-257-1	ARM ASSY, FF	
869	3-945-697-01	GEAR (B), L	
870	3-945-700-01	GEAR (A), L	
871	1-641-643-12	FP-444 FLEXIBLE BOARD	
872	1-691-254-13	CONNECTOR, TRANSLATION 10P	
873	3-945-756-01	SCREW (M1.4X3)	
874	1-641-639-13	FP-442 FLEXIBLE BOARD	
875	1-645-271-11	FP-575 FLEXIBLE BOARD	
S001	1-572-986-11	SWITCH, ROTARY (ENCODER)	
S005	1-570-771-21	SWITCH (C DOWN)	

5-2. ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- Canadian model is abbreviated as CND.
  Hong Kong model is abbreviated as HK.
  Tourist model is abbreviated as JE.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ , for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH

Ref. No.	Part No.	Description			Remark
	A-7066-364-A	AU-184 BOARD, COMPLETE **********************			
		< CAPACITOR >			
C1301	1-124-779-00	ELECT CHIP	10uF	20%	16V
C1302	1-124-779-00	ELECT CHIP	10uF	20%	16V
C1305	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C1308	1-126-607-11	ELECT CHIP	47uF	20%	4V
C1309	1-126-607-11	ELECT CHIP	47uF	20%	4V
C1312	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1313	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1314	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1315	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C1316	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C1317	1-126-607-11	ELECT CHIP	47uF	20%	4V
C1318	1-126-207-11	ELECT CHIP	33uF	20%	4V
C1319	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C1320	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C1321	1-126-209-11	ELECT	100uF	20%	4V
C1322	1-124-779-00	ELECT CHIP	10uF	20%	16V
C1323	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C1324	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C1326	1-165-320-11	CERAMIC CHIP	0.47uF	10%	16V
C1327	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1328	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C1329	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C1330	1-126-607-11	ELECT CHIP	47uF	20%	4V
C1331	1-165-320-11	CERAMIC CHIP	0.47uF	10%	16V
C1332	1-126-601-11	ELECT CHIP	2.2uF	20%	50V
C1333	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1334	1-126-607-11	ELECT CHIP	47uF	20%	4V
C1335	1-165-320-11	CERAMIC CHIP	0.47uF	10%	16V
C1336	1-126-601-11	ELECT CHIP	2.2uF	20%	50V
C1337	1-126-601-11	ELECT CHIP	2.2uF	20%	50V
C1338	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1339	1-165-320-11	CERAMIC CHIP	0.47uF	10%	16V
C1340	1-126-601-11	ELECT CHIP	2.2uF	20%	50V
C1341	1-126-602-11	ELECT CHIP	3.3uF	20%	50V
C1342	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C1343	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C1344	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1345	1-126-602-11	ELECT CHIP	3.3uF	20%	50V
C1346	1-163-209-00	CERAMIC CHIP	0.0015uF	10%	50V
C1348	1-124-779-00	ELECT CHIP	10uF	20%	16V
C1350	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C1351	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C1352	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1358	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C1379	1-126-607-11	ELECT CHIP	47uF	20%	4V
		< CONNECTOR >			
CN1301	1-691-490-21	CONNECTOR, FFC/FPC 11P			
* CN1302	1-691-933-11	CONNECTOR, BOARD TO BOARD 34P			
		< DIODE >			
D1303	8-719-404-49	DIODE	MA111		
D1306	8-719-052-33	DIODE	MAZV082DFL		
D1307	8-719-052-33	DIODE	MAZV082DFL		
		< IC >			
IC130	8-759-330-00	IC	AN3988NFHP-EB		
		< TRANSISTOR >			
Q1301	8-729-230-63	TRANSISTOR	2SC4116-YG		
Q1302	8-729-230-63	TRANSISTOR	2SC4116-YG		
Q1303	8-729-402-42	TRANSISTOR	UN5213		
Q1304	8-729-403-35	TRANSISTOR	UN5113		
Q1305	8-729-230-63	TRANSISTOR	2SC4116-YG		
Q1306	8-729-230-63	TRANSISTOR	2SC4116-YG		
Q1307	8-729-230-63	TRANSISTOR	2SC4116-YG		
Q1308	8-729-230-63	TRANSISTOR	2SC4116-YG		
Q1309	8-729-420-53	TRANSISTOR	UN5115		
Q1313	8-729-420-53	TRANSISTOR	UN5115		
Q1314	8-729-015-76	TRANSISTOR	UN5211		
		< RESISTOR >			
R1301	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1302	1-216-817-11	METAL CHIP	470	5%	1/16W
R1303	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1304	1-216-817-11	METAL CHIP	470	5%	1/16W
R1307	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1308	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1309	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R1310	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R1313	1-216-810-11	METAL CHIP	120	5%	1/16W

Ref. No.	Part No.	Description	Remark
R1314	1-216-810-11	METAL CHIP 120 5% 1/16W	
R1315	1-216-864-11	METAL CHIP 0 5% 1/16W	
R1316	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R1317	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R1318	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R1319	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R1320	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R1321	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R1322	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R1323	1-216-813-11	METAL CHIP 220 5% 1/16W	
R1324	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R1325	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R1326	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R1328	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R1329	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R1330	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R1332	1-216-864-11	METAL CHIP 0 5% 1/16W	
R1333	1-216-864-11	METAL CHIP 0 5% 1/16W	
R1334	1-218-875-11	METAL CHIP 15K 0.50% 1/16W	
R1336	1-218-903-11	METAL CHIP 220K 0.50% 1/16W	
R1341	1-216-864-11	METAL CHIP 0 5% 1/16W	
R1344	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R1346	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R1347	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R1348	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R1349	1-216-817-11	METAL CHIP 470 5% 1/16W	
R1350	1-216-817-11	METAL CHIP 470 5% 1/16W	
R1351	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R1352	1-216-864-11	METAL CHIP 0 5% 1/16W	
R1355	1-216-864-11	METAL CHIP 0 5% 1/16W	
R1358	1-216-864-11	METAL CHIP 0 5% 1/16W	
R1361	1-216-295-91	CONDUCTOR, CHIP (2012)	

****

A-7072-134-A CD-137 A BOARD, COMPLETE
****
(TR83/TR93/TR100/TR600/TR670/TR880)

A-7072-135-A CD-137 B BOARD, COMPLETE
****
(TR36/TR73/TR76/TR560)
(Ref. No. 3,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C691	1-135-214-21	TANTAL. CHIP 4.7uF 20% 20V	
C692	1-135-210-11	TANTALUM CHIP 4.7uF 20% 10V	
C693	1-163-227-11	CERAMIC CHIP 10PF 0.5PF 50V	(TR36/TR73/TR76/TR560)
C694	1-164-346-11	CERAMIC CHIP 1uF 16V	
C695	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C696	1-104-908-11	TANTAL. CHIP 47uF 20% 4V	

< IC >

Ref. No.	Part No.	Description	Remark
IC691	A-7030-368-A	CCD BLOCK ASSY (054 SERVICE)(CCD IMAGER)	(TR36/TR73/TR76/TR560)
IC691	A-7030-373-A	CCD BLOCK ASSY (059 SERVICE)(CCD IMAGER)	(TR83/TR93/TR100/TR600/TR670/TR880)

< COIL >

Ref. No.	Part No.	Description	Remark
L691	1-412-963-11	INDUCTOR 100uH	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q691	8-729-232-86	TRANSISTOR 2SK1875-BL/V	
Q692	8-729-117-73	TRANSISTOR 2SC4178-F14	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R692	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R693	1-216-839-11	METAL CHIP 33K 5% 1/16W	(TR36/TR73/TR76/TR560)
R693	1-216-840-11	METAL CHIP 39K 5% 1/16W	(TR83/TR93/TR100/TR600/TR670/TR880)
R694	1-216-045-00	METAL CHIP 680 5% 1/10W	(TR36/TR73/TR76/TR560)
R694	1-216-047-00	METAL CHIP 820 5% 1/10W	(TR83/TR93/TR100/TR600/TR670/TR880)
R695	1-216-845-11	METAL CHIP 100K 5% 1/16W	(TR83/TR93/TR100/TR600/TR670/TR880)
R695	1-216-849-11	METAL CHIP 220K 5% 1/16W	(TR36/TR73/TR76/TR560)
R696	1-216-809-11	METAL CHIP 100 5% 1/16W	
R697	1-216-073-00	METAL CHIP 10K 5% 1/10W	

< FLEXIBLE BOARD >

Ref. No.	Part No.	Description	Remark
W691	1-654-849-11	FP-275 FLEXIBLE BOARD	
W692	1-654-849-11	FP-275 FLEXIBLE BOARD	

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A-7066-366-A DD-78 BOARD, COMPLETE (TR36/TR83/TR100)
****

A-7066-404-A DD-78 BOARD, COMPLETE
****
(EXCEPT TR36/TR83/TR100)

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C901	1-164-492-11	CERAMIC CHIP 0.15uF 10% 16V	
C902	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C903	1-163-121-00	CERAMIC CHIP 150PF 5% 50V	
C904	1-163-121-00	CERAMIC CHIP 150PF 5% 50V	
C906	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V	
C907	1-162-963-11	CERAMIC CHIP 680PF 10% 50V	

Be sure to read "Note on the CCD Imager replacement" on page 4-6 when changing the CCD imager.

Ref. No.	Part No.	Description	Remark
C908	1-162-963-11	CERAMIC CHIP 680PF 10% 50V	
C909	1-162-963-11	CERAMIC CHIP 680PF 10% 50V	
C910	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C911	1-162-963-11	CERAMIC CHIP 680PF 10% 50V	
C912	1-128-530-11	ELECT CHIP 33uF 20% 10V	
C913	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C914	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C915	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C916	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C917	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C918	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C920	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C921	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C923	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C924	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C925	1-164-506-11	CERAMIC CHIP 4.7uF 16V	
C926	1-164-337-11	CERAMIC CHIP 2.2uF 16V	
C927	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C928	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C929	1-135-216-11	TANTALUM CHIP 10uF 20% 10V	
C930	1-107-418-11	ELECT CHIP 10uF 20% 35V	
C931	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C932	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C934	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C935	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C936	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C937	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C938	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C939	1-163-023-00	CERAMIC CHIP 0.015uF 5% 50V	
C940	1-163-023-00	CERAMIC CHIP 0.015uF 5% 50V	
C941	1-163-019-00	CERAMIC CHIP 0.0068uF 10% 50V	
C942	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C943	1-163-019-00	CERAMIC CHIP 0.0068uF 10% 50V	
C944	1-164-161-11	CERAMIC CHIP 0.0022uF 10% 100V	
C945	1-128-530-11	ELECT CHIP 33uF 20% 10V	
C950	1-128-004-11	ELECT CHIP 10uF 20% 16V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN901	1-695-324-11	CONNECTOR, BOARD TO BOARD 42P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D901	8-719-027-77	DIODE MA796	
D909	8-719-404-49	DIODE MA111	
D910	8-719-404-49	DIODE MA111	

< FUSE >

Ref. No.	Part No.	Description	Remark
⚠F450	1-576-213-11	FUSE, CHIP	
⚠F451	1-576-213-11	FUSE, CHIP	
⚠F452	1-576-213-11	FUSE, CHIP	

< IC >

Ref. No.	Part No.	Description	Remark
IC901	8-759-295-31	IC MB3799-03PFV-G-BND-ER	

< JACK >

Ref. No.	Part No.	Description	Remark
J901	1-537-281-41	TERMINAL BOARD	
J902	1-565-276-21	JACK, ULTRA SMALL 1P	
J903	1-569-809-11	JACK (SMALL TYPE)	

< COIL >

Ref. No.	Part No.	Description	Remark
L901	1-424-653-11	COIL, CHOKE 10uH	
L902	1-424-653-11	COIL, CHOKE 10uH	
L903	1-424-653-11	COIL, CHOKE 10uH	
L904	1-409-556-11	COIL, CHOKE 47uH	
L905	1-424-674-11	COIL, CHOKE 22uH	
L906	1-409-556-11	COIL, CHOKE 47uH	
L907	1-424-674-11	COIL, CHOKE 22uH	
L908	1-424-674-11	COIL, CHOKE 22uH	
L909	1-412-056-11	INDUCTOR CHIP 4.7uH	
L910	1-412-056-11	INDUCTOR CHIP 4.7uH	
L911	1-412-056-11	INDUCTOR CHIP 4.7uH	
L912	1-412-056-11	INDUCTOR CHIP 4.7uH	
L913	1-412-056-11	INDUCTOR CHIP 4.7uH	
L914	1-412-064-11	INDUCTOR CHIP 100uH	
L915	1-412-064-11	INDUCTOR CHIP 100uH	
L916	1-412-056-11	INDUCTOR CHIP 4.7uH	
L917	1-412-056-11	INDUCTOR CHIP 4.7uH	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q900	8-729-422-14	TRANSISTOR XN4111	(EXCEPT TR36/TR83/TR100)
Q901	8-729-420-12	TRANSISTOR XN4213	
Q902	8-729-804-41	TRANSISTOR 2SB1122-S	
Q903	8-729-823-82	TRANSISTOR FP101	
Q904	8-729-823-84	TRANSISTOR FP102	
Q905	8-729-823-82	TRANSISTOR FP101	
Q906	8-729-823-82	TRANSISTOR FP101	
Q907	8-729-823-82	TRANSISTOR FP101	
Q908	8-729-420-12	TRANSISTOR XN4213	(EXCEPT TR36/TR83/TR100)
Q909	8-729-805-25	TRANSISTOR 2SB1121	
Q910	8-729-429-32	TRANSISTOR UN9210-QRS	(EXCEPT TR36/TR83/TR100)
Q914	8-729-402-42	TRANSISTOR UN5213	
Q915	8-729-402-42	TRANSISTOR UN5213	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R901	1-218-872-11	METAL CHIP 11K 0.50% 1/16W	
R902	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R903	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R904	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
R905	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R906	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R907	1-216-035-00	METAL CHIP 270 5% 1/10W	
R908	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R909	1-216-031-00	METAL CHIP 180 5% 1/10W	
R910	1-216-029-00	METAL CHIP 150 5% 1/10W	
R911	1-216-029-00	METAL CHIP 150 5% 1/10W	
R912	1-216-029-00	METAL CHIP 150 5% 1/10W	
R913	1-216-041-00	METAL CHIP 470 5% 1/10W	
R915	1-216-864-11	METAL CHIP 0 5% 1/16W	
R918	1-216-819-11	METAL CHIP 680 5% 1/16W	
R919	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R920	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R921	1-412-052-21	INDUCTOR CHIP luH	
R922	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R923	1-412-052-21	INDUCTOR CHIP luH	
R924	1-412-979-21	INDUCTOR luH	
R925	1-216-864-11	METAL CHIP 0 5% 1/16W	
R927	1-216-814-11	METAL CHIP 270 5% 1/16W	(EXCEPT TR36/TR83/TR100)
R927	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR36/TR83/TR100)
R928	1-216-852-11	METAL CHIP 390K 5% 1/16W	
R931	1-216-864-11	METAL CHIP 0 5% 1/16W	
R932	1-412-979-21	INDUCTOR luH	
R933	1-412-979-21	INDUCTOR luH	
R936	1-412-979-21	INDUCTOR luH	
R937	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR36/TR83/TR100)
R938	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR36/TR83/TR100)
R939	1-216-864-11	METAL CHIP 0 5% 1/16W	(EXCEPT TR36/TR83/TR100)
R940	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR36/TR83/TR100)
R941	1-218-849-11	METAL CHIP 1.2K 0.50% 1/16W	
R942	1-216-864-11	METAL CHIP 0 5% 1/16W	
R943	1-216-864-11	METAL CHIP 0 5% 1/16W	(EXCEPT TR36/TR83/TR100)
R944	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR36/TR83/TR100)
R945	1-218-847-11	METAL CHIP 1K 0.50% 1/16W	
R946	1-216-841-11	METAL CHIP 47K 5% 1/16W	(EXCEPT TR36/TR83/TR100)
R947	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	(EXCEPT TR36/TR83/TR100)
R948	1-216-837-11	METAL CHIP 22K 5% 1/16W	(EXCEPT TR36/TR83/TR100)
R949	1-216-841-11	METAL CHIP 47K 5% 1/16W	(EXCEPT TR36/TR83/TR100)

< TRANSFORMER >

Ref. No.	Part No.	Description	Remark
T901	1-426-938-11	TRANSFORMER, DC/DC CONVERTER	(TR36/TR83/TR100)
T901	1-427-676-21	TRANSFORMER, DC/DC CONVERTER	(EXCEPT TR36/TR83/TR100)

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1-651-890-11 FP-49 FLEXIBLE BOARD

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(TR83/TR93/TR600/TR670/TR880)

(Ref. No. 3,000 Series)

< SENSOR >

Ref. No.	Part No.	Description	Remark
SE691	1-810-725-31	SENSOR, ANGULAR VELOCITY	
SE692	1-810-725-41	SENSOR, ANGULAR VELOCITY	

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A-7066-408-A HE-19 BOARD, COMPLETE

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(TR100/TR600/TR880)

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C1103	1-162-917-11	CERAMIC CHIP 15PF 5% 50V	
C1106	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	
C1107	1-162-917-11	CERAMIC CHIP 15PF 5% 50V	
C1108	1-162-923-11	CERAMIC CHIP 47PF 5% 50V	
C1109	1-162-928-11	CERAMIC CHIP 120PF 5% 50V	
C1110	1-162-909-11	CERAMIC CHIP 4PF 0.25PF 50V	
C1111	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C1112	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C1113	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C1114	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C1115	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C1116	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C1117	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C1118	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C1119	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	
C1121	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C1122	1-162-928-11	CERAMIC CHIP 120PF 5% 50V	
C1123	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C1124	1-162-925-11	CERAMIC CHIP 68PF 5% 50V	
C1125	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C1126	1-162-923-11	CERAMIC CHIP 47PF 5% 50V	
C1127	1-162-912-11	CERAMIC CHIP 7PF 0.5PF 50V	
C1128	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C1129	1-162-925-11	CERAMIC CHIP 68PF 5% 50V	
C1130	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C1131	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C1132	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C1133	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	

Ref.No.	Part No.	Description				Remark
C1134	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C1135	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C1136	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C1137	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C1138	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C1139	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V	
C1140	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C1141	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C1142	1-164-392-11	CERAMIC CHIP	390PF	5%	50V	
C1143	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V	
C1144	1-162-918-11	CERAMIC CHIP	18PF	5%	50V	
C1146	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C1147	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V	
C1148	1-162-917-11	CERAMIC CHIP	15PF	5%	50V	
C1150	1-162-913-11	CERAMIC CHIP	8PF	0.5PF	50V	
C1151	1-162-921-11	CERAMIC CHIP	33PF	5%	50V	
C1152	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C1155	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C1156	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C1157	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C1158	1-162-923-11	CERAMIC CHIP	47PF	5%	50V	
C1160	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C1161	1-162-928-11	CERAMIC CHIP	120PF	5%	50V	
C1163	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V	
C1164	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C1165	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V	
C1166	1-164-217-11	CERAMIC CHIP	150PF	5%	50V	
C1167	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C1168	1-162-959-11	CERAMIC CHIP	330PF	5%	50V	
C1169	1-164-155-11	CERAMIC CHIP	75PF	5%	50V	
C1170	1-162-921-11	CERAMIC CHIP	33PF	5%	50V	
C1171	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C1173	1-162-923-11	CERAMIC CHIP	47PF	5%	50V	
C1175	1-164-217-11	CERAMIC CHIP	150PF	5%	50V	
C1177	1-164-218-11	CERAMIC CHIP	180PF	0.25PF	50V	
C1178	1-164-218-11	CERAMIC CHIP	180PF	0.25PF	50V	
C1179	1-162-925-11	CERAMIC CHIP	68PF	5%	50V	
C1180	1-162-926-11	CERAMIC CHIP	82PF	5%	50V	
C1181	1-164-392-11	CERAMIC CHIP	390PF	5%	50V	
C1182	1-164-217-11	CERAMIC CHIP	150PF	5%	50V	
C1183	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C1184	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C1185	1-162-919-11	CERAMIC CHIP	22PF	5%	50V	
C1188	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C1189	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C1192	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C1196	1-162-928-11	CERAMIC CHIP	120PF	5%	50V	
C1198	1-164-471-11	CERAMIC CHIP	680PF	5%	50V	

Ref.No.	Part No.	Description		Remark
		< CONNECTOR >		
* CN1101	1-573-341-11	CONNECTOR, BOARD TO BOARD 26P		
		< DIODE >		
D1101	8-719-404-49	DIODE	MA111	
D1102	8-719-027-48	DIODE	MA142WA-(TX)	
D1103	8-719-027-48	DIODE	MA142WA-(TX)	
D1105	8-719-404-49	DIODE	MA111	
		< FILTER >		
FL1101	1-236-775-11	FILTER, LOW PASS (DEM)		
FL1102	1-239-112-21	FILTER, LOW PASS (Y)		
		< IC >		
IC1101	8-752-058-02	IC	CXA1509AR	
IC1102	8-759-070-51	IC	SN74HCU04ADB	
		< COIL >		
L1101	1-412-963-11	INDUCTOR	100uH	
L1102	1-412-954-11	INDUCTOR	18uH	
L1103	1-412-949-21	INDUCTOR	6.8uH	
L1104	1-412-961-11	INDUCTOR	68uH	
L1105	1-412-954-11	INDUCTOR	18uH	
L1106	1-412-945-11	INDUCTOR	3.3uH	
L1107	1-412-962-11	INDUCTOR	82uH	
L1108	1-412-954-11	INDUCTOR	18uH	
L1109	1-412-948-11	INDUCTOR	5.6uH	
L1110	1-412-951-11	INDUCTOR	10uH	
L1111	1-410-655-31	INDUCTOR CHIP	120uH	
L1112	1-412-058-11	INDUCTOR CHIP	10uH	
L1113	1-412-058-11	INDUCTOR CHIP	10uH	
L1114	1-412-958-21	INDUCTOR	39uH	
L1116	1-412-946-11	INDUCTOR	3.9uH	
L1118	1-412-955-11	INDUCTOR	22uH	
L1120	1-412-953-11	INDUCTOR	15uH	
L1121	1-412-949-21	INDUCTOR	6.8uH	
L1122	1-412-953-11	INDUCTOR	15uH	
L1123	1-412-950-11	INDUCTOR	8.2uH	
L1124	1-412-962-11	INDUCTOR	82uH	
L1128	1-412-962-11	INDUCTOR	82uH	
		< TRANSISTOR >		
Q1102	8-729-402-42	TRANSISTOR	UN5213	
Q1103	8-729-012-50	TRANSISTOR	2SC4400-3/4/5	
Q1107	8-729-402-42	TRANSISTOR	UN5213	
Q1110	8-729-120-28	TRANSISTOR	2SC1623-L5L6	
Q1111	8-729-420-24	TRANSISTOR	2SB1218A-QRS	
Q1113	8-729-012-50	TRANSISTOR	2SC4400-3/4/5	
Q1114	8-729-402-81	TRANSISTOR	XN4501	

Ref. No.	Part No.	Description	Remark
Q1115	8-729-012-50	TRANSISTOR 2SC4400-3/4/5	
Q1117	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q1119	8-729-402-42	TRANSISTOR UN5213	
Q1120	8-729-403-35	TRANSISTOR UN5113	
Q1121	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q1122	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q1123	8-729-012-50	TRANSISTOR 2SC4400-3/4/5	
Q1125	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q1126	8-729-012-50	TRANSISTOR 2SC4400-3/4/5	
Q1127	8-729-403-35	TRANSISTOR UN5113	
Q1129	8-729-012-50	TRANSISTOR 2SC4400-3/4/5	
Q1130	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q1131	8-729-824-02	TRANSISTOR 2SA1838	
Q1132	8-729-012-50	TRANSISTOR 2SC4400-3/4/5	
Q1133	8-729-012-50	TRANSISTOR 2SC4400-3/4/5	
Q1134	8-729-402-42	TRANSISTOR UN5213	
Q1137	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q1138	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q1143	8-729-403-35	TRANSISTOR UN5113	

< RESISTOR >

Ref. No.	Part No.	Description				Remark
R1100	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R1101	1-216-814-11	METAL CHIP	270	5%	1/16W	
R1102	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1103	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1104	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R1105	1-216-817-11	METAL CHIP	470	5%	1/16W	
R1106	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R1107	1-216-819-11	METAL CHIP	680	5%	1/16W	
R1108	1-216-813-11	METAL CHIP	220	5%	1/16W	
R1109	1-216-813-11	METAL CHIP	220	5%	1/16W	
R1110	1-216-815-11	METAL CHIP	330	5%	1/16W	
R1111	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R1112	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R1113	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R1114	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R1115	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R1116	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R1118	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R1119	1-216-814-11	METAL CHIP	270	5%	1/16W	
R1120	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R1123	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R1124	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R1125	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R1127	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R1128	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R1129	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1130	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R1131	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R1132	1-216-820-11	METAL CHIP	820	5%	1/16W	
R1134	1-216-820-11	METAL CHIP	820	5%	1/16W	
R1135	1-216-814-11	METAL CHIP	270	5%	1/16W	
R1136	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R1138	1-216-816-11	METAL CHIP	390	5%	1/16W	
R1148	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R1149	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R1151	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R1152	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R1153	1-216-818-11	METAL CHIP	560	5%	1/16W	
R1154	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R1155	1-216-817-11	METAL CHIP	470	5%	1/16W	
R1156	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R1157	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R1158	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R1159	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R1160	1-216-820-11	METAL CHIP	820	5%	1/16W	
R1161	1-216-819-11	METAL CHIP	680	5%	1/16W	
R1162	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R1163	1-216-813-11	METAL CHIP	220	5%	1/16W	
R1164	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R1165	1-216-814-11	METAL CHIP	270	5%	1/16W	
R1166	1-216-815-11	METAL CHIP	330	5%	1/16W	
R1168	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R1169	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R1170	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R1171	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R1172	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R1174	1-216-813-11	METAL CHIP	220	5%	1/16W	
R1175	1-216-813-11	METAL CHIP	220	5%	1/16W	
R1176	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R1177	1-216-814-11	METAL CHIP	270	5%	1/16W	
R1178	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R1179	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R1180	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1182	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R1183	1-216-817-11	METAL CHIP	470	5%	1/16W	
R1184	1-216-819-11	METAL CHIP	680	5%	1/16W	
R1185	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R1186	1-216-817-11	METAL CHIP	470	5%	1/16W	
R1187	1-216-815-11	METAL CHIP	330	5%	1/16W	
R1188	1-216-820-11	METAL CHIP	820	5%	1/16W	
R1189	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1191	1-216-812-11	METAL CHIP	180	5%	1/16W	
R1194	1-216-819-11	METAL CHIP	680	5%	1/16W	
R1196	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R1197	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R1198	1-216-819-11	METAL CHIP	680	5%	1/16W	
R1199	1-216-819-11	METAL CHIP	680	5%	1/16W	
R1201	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R1202	1-216-811-11	METAL CHIP	150	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R1204	1-216-815-11	METAL CHIP	330	5%	1/16W	
R1205	1-216-817-11	METAL CHIP	470	5%	1/16W	
R1206	1-216-819-11	METAL CHIP	680	5%	1/16W	
R1207	1-216-815-11	METAL CHIP	330	5%	1/16W	
R1208	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R1209	1-216-817-11	METAL CHIP	470	5%	1/16W	
R1210	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R1212	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R1213	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R1214	1-216-820-11	METAL CHIP	820	5%	1/16W	
R1215	1-216-819-11	METAL CHIP	680	5%	1/16W	
R1216	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R1217	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R1218	1-216-817-11	METAL CHIP	470	5%	1/16W	
R1219	1-216-817-11	METAL CHIP	470	5%	1/16W	
R1220	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1221	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1223	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1226	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1229	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R1232	1-216-812-11	METAL CHIP	180	5%	1/16W	
R1234	1-216-864-11	METAL CHIP	0	5%	1/16W	

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A-7072-210-A LB-38 BOARD, COMPLETE
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(EXCEPT TR36/TR83/TR100)

Ref. No.	Part No.	Description				Remark
		< FLUORESCENT >				
BL801	1-517-325-11	LANP, FLUORESCENT (0.55 INCH)				
		< CAPACITOR >				
C801	1-104-917-11	TANTAL. CHIP	15uF	20%	20V	
C802	1-165-178-11	CERAMIC CHIP	6.8uF		16V	
C803	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C804	1-163-020-00	CERAMIC CHIP	0.0082uF	10%	50V	
C805	1-163-020-00	CERAMIC CHIP	0.0082uF	10%	50V	
C806	1-163-020-00	CERAMIC CHIP	0.0082uF	10%	50V	
		< CONNECTOR >				
* CN801	1-573-333-21	CONNECTOR, BOARD TO BOARD 10P				
		< DIODE >				
D801	8-719-033-14	DIODE	CL-170PG-CD-T			
D802	8-719-802-36	DIODE	1SS250			
		< COIL >				
L801	1-412-033-11	INDUCTOR CHIP 220uH				
L802	1-412-029-11	INDUCTOR CHIP 10uH				
		< TRANSISTOR >				
Q801	8-729-024-60	TRANSISTOR	MTD6N15T4			
		< RESISTOR >				
R801	1-216-804-11	METAL CHIP	39	5%	1/16W	
R802	1-216-840-11	METAL CHIP	39K	5%	1/16W	
		< TRANSFORMER >				
T801	1-426-848-61	TRANSFORMER, INVERTER				

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LS-33 BOARD (Ref. No. 3,000 Series)
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Ref. No.	Part No.	Description				Remark
		< DIODE >				
D001	8-719-989-52	DIODE	GL4600S			
		< HALL ELEMENT >				
H001	8-719-987-62	DIODE	LT140SAZ			
H002	8-719-987-62	DIODE	LT140SAZ			
		< TRANSISTOR >				
Q001	8-729-012-46	TRANSISTOR	PT4600FS			
Q002	8-729-012-46	TRANSISTOR	PT4600FS			
		< RESISTOR >				
R003	1-216-033-00	METAL CHIP	220	5%	1/10W	
R004	1-216-033-00	METAL CHIP	220	5%	1/10W	
R010	1-216-033-00	METAL CHIP	220	5%	1/10W	
R011	1-216-033-00	METAL CHIP	220	5%	1/10W	
		< SWITCH >				
S002	1-572-987-11	SWITCH, PUSH (3 KEY)				

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A-7066-368-A MA-233 BOARD, COMPLETE
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Ref. No.	Part No.	Description				Remark
		< CAPACITOR >				
C001	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V	
C002	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C004	1-163-020-00	CERAMIC CHIP	0.0082uF	10%	50V	
C005	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V	
C006	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V	
C007	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V	

Ref. No.	Part No.	Description				Remark
C008	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V	
C009	1-163-024-00	CERAMIC CHIP	0.018uF	10%	50V	
C010	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C011	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C012	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	
C013	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	
C014	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C016	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C017	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C018	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C019	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C020	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C021	1-163-024-00	CERAMIC CHIP	0.018uF	10%	50V	
C022	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V	
C023	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V	
C024	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V	
C025	1-163-020-00	CERAMIC CHIP	0.0082uF	10%	50V	
C026	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V	
C028	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C029	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V	

< CONNECTOR >

* CN001	1-580-055-21	PIN, CONNECTOR 2P
CN002	1-691-490-21	CONNECTOR, FFC/FPC 11P
* CN003	1-580-055-21	PIN, CONNECTOR 2P

< DIODE >

D001	8-719-404-19	DIODE	LN1251C
D002	8-719-404-49	DIODE	MA111
D003	8-719-404-49	DIODE	MA111

< IC >

IC001	8-759-161-31	IC	LA7471M-TE-B
IC002	8-749-923-29	IC	RS-20E-T

< JACK >

J001	1-691-737-11	JACK (SMALL TYPE)

< COIL >

L001	1-412-939-11	INDUCTOR	1uH
L002	1-412-939-11	INDUCTOR	1uH
L003	1-412-939-11	INDUCTOR	1uH

< RESISTOR >

Ref. No.	Part No.	Description				Remark
R001	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R002	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R003	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R004	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R005	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R006	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R007	1-216-843-11	METAL CHIP	68K	5%	1/16W	
R008	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R009	1-216-813-11	METAL CHIP	220	5%	1/16W	
R010	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R011	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R012	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R014	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R016	1-216-815-11	METAL CHIP	330	5%	1/16W	
R017	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R018	1-216-817-11	METAL CHIP	470	5%	1/16W	
R019	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R020	1-216-843-11	METAL CHIP	68K	5%	1/16W	
R021	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R022	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R023	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R024	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R025	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R026	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R036	1-216-864-11	METAL CHIP	0	5%	1/16W	
R037	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R038	1-216-838-11	METAL CHIP	27K	5%	1/16W	

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A-7072-283-A SL-38 BOARD, COMPLETE
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(Ref. No. 4,000 Series)

< CAPACITOR >

C543	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C544	1-135-211-11	TANTAL. CHIP	6.8uF	20%	6.3V
C545	1-135-211-11	TANTAL. CHIP	6.8uF	20%	6.3V
C546	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C547	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C551	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C553	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C554	1-135-215-21	TANTAL. CHIP	6.8uF	20%	16V
C555	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C556	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C557	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C558	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V

< CONNECTOR >

CN500	1-691-473-21	CONNECTOR, FFC/FPC 7P
CN500	1-691-481-11	CONNECTOR, FFC/FPC 7P
CN501	1-691-472-21	CONNECTOR, FFC/FPC 6P
CN501	1-691-480-11	CONNECTOR, FFC/FPC 6P
CN502	1-691-482-21	CONNECTOR, FFC/FPC 15P

Ref. No.	Part No.	Description	Remark
		< IC >	
IC507	8-759-165-47	IC MPC1780VFUEB	
		< COIL >	
L505	1-414-078-11	INDUCTOR 10uH	
		< TRANSISTOR >	
Q560	8-729-805-25	TRANSISTOR 2SB1121	
Q561	8-729-425-50	TRANSISTOR 2SB1462-Q	
Q562	8-729-402-81	TRANSISTOR XN4501	
		< RESISTOR >	
R562	1-218-879-11	METAL CHIP 22K 0.50% 1/16W	
R563	1-218-879-11	METAL CHIP 22K 0.50% 1/16W	
R564	1-216-864-11	METAL CHIP 0 5% 1/16W	
R565	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R566	1-218-857-11	METAL CHIP 2.7K 0.50% 1/16W	
R567	1-216-295-91	CONDUCTOR, CHIP (2012)	
R568	1-216-168-00	METAL GLAZE 56 5% 1/8W	
R569	1-218-879-11	METAL CHIP 22K 0.50% 1/16W	
R570	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R571	1-218-879-11	METAL CHIP 22K 0.50% 1/16W	
R572	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R573	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R590	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R591	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
		< FLEXIBLE BOARD >	
W500	1-651-889-11	FP-48 FLEXIBLE BOARD	
W501	1-642-186-11	FP-437 FLEXIBLE BOARD	

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Ref. No.	Part No.	Description	Remark
	A-7066-367-A	VC-161 BOARD, COMPLETE (TR83) *****************************	
	A-7066-405-A	VC-161 BOARD, COMPLETE **********************	(TR93/TR600/TR670/TR880)
	A-7066-407-A	VC-161 BOARD, COMPLETE (TR100) ******************************	
	A-7066-410-A	VC-161 BOARD, COMPLETE (TR73/TR76/TR560) **	
	A-7066-420-A	VC-161 BOARD, COMPLETE (TR36) *****************************	
		< CAPACITOR >	
C604	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C605	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C606	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C607	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C608	1-104-847-11	TANTAL. CHIP 22uF 20% 4V	(TR36/TR83)
C609	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C610	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C611	1-164-360-11	CERAMIC CHIP 0.1uF 16V	(TR36/TR83)
C613	1-162-974-11	CERAMIC CHIP 0.01uF 50V	(TR36/TR83)
C614	1-162-974-11	CERAMIC CHIP 0.01uF 50V	(TR36/TR83)
C616	1-135-091-91	TANTAL. CHIP 1uF 20% 16V	
C617	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C618	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
C619	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C620	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C621	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C622	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C623	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C624	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C628	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C629	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C630	1-162-920-11	CERAMIC CHIP 27PF 5% 50V	(EXCEPT TR83)
C630	1-162-946-11	CERAMIC CHIP 27PF 5% 50V	(TR83)
C631	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C632	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C633	1-162-920-11	CERAMIC CHIP 27PF 5% 50V	(TR93/TR100/TR600/TR670/TR880)
C633	1-162-921-11	CERAMIC CHIP 33PF 5% 50V	(TR36/TR73/TR76/TR560)
C633	1-162-946-11	CERAMIC CHIP 27PF 5% 50V	(TR83)
C634	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C635	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	(TR83/TR93/TR600/TR670/TR880)
C636	1-164-360-11	CERAMIC CHIP 0.1uF 16V	(TR83/TR93/TR600/TR670/TR880)
C637	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C638	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C639	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C641	1-162-923-11	CERAMIC CHIP 47PF 5% 50V	(TR93/TR600/TR670/TR880)
C641	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	(TR83)
C642	1-162-923-11	CERAMIC CHIP 47PF 5% 50V	(TR93/TR600/TR670/TR880)
C642	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	(TR83)
C644	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C645	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C646	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C647	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C691	1-164-492-11	CERAMIC CHIP 0.15uF 10% 16V	

Ref. No.	Part No.	Description	Remark
C701	1-163-059-91	CERAMIC CHIP 0.01uF 10% 50V	
C702	1-162-638-11	CERAMIC CHIP 1uF 16V	
C703	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C704	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C705	1-135-145-11	TANTALUM CHIP 0.47uF 10% 35V	
C706	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C708	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C709	1-135-214-21	TANTAL. CHIP 4.7uF 20% 20V	
C710	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C711	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C712	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C713	1-104-752-11	TANTAL. CHIP 33uF 20% 6.3V	
C714	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C715	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C716	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C717	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C718	1-162-637-11	CERAMIC CHIP 0.47uF 16V	
C719	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C720	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C721	1-162-916-11	CERAMIC CHIP 12PF 5% 50V	
C722	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C724	1-162-923-11	CERAMIC CHIP 47PF 5% 50V	(TR93/TR100/TR600/TR670/TR880)
C724	1-162-925-11	CERAMIC CHIP 68PF 5% 50V	(TR36/TR73/TR76/TR560)
C724	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	(TR83)
C725	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C726	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C727	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C728	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C729	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C730	1-164-492-11	CERAMIC CHIP 0.15uF 10% 16V	
C731	1-135-145-11	TANTALUM CHIP 0.47uF 10% 35V	
C732	1-162-638-11	CERAMIC CHIP 1uF 16V	
C733	1-162-638-11	CERAMIC CHIP 1uF 16V	
C734	1-135-145-11	TANTALUM CHIP 0.47uF 10% 35V	
C735	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C741	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C742	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C743	1-163-059-91	CERAMIC CHIP 0.01uF 10% 50V	
C744	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C745	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C746	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C747	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C748	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C749	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C750	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C751	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C752	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C753	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C754	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C755	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C756	1-104-752-11	TANTAL. CHIP 33uF 20% 6.3V	
C757	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C771	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V	(TR83/TR93/TR600/TR670/TR880)
C772	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	(TR83/TR93/TR600/TR670/TR880)
C773	1-164-299-11	CERAMIC CHIP 0.22uF 10% 25V	(TR83/TR93/TR600/TR670/TR880)
C774	1-128-257-21	ELECT CHIP 33uF 20% 10V	(TR83/TR93/TR600/TR670/TR880)
C775	1-128-257-21	ELECT CHIP 33uF 20% 10V	(TR83/TR93/TR600/TR670/TR880)
C776	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	(TR93/TR600/TR670/TR880)
C776	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	(TR83)
C777	1-162-568-11	CERAMIC CHIP 0.33uF 10% 16V	(TR83/TR93/TR600/TR670/TR880)
C778	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	(TR93/TR600/TR670/TR880)
C778	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	(TR83)
C779	1-162-568-11	CERAMIC CHIP 0.33uF 10% 16V	(TR83/TR93/TR600/TR670/TR880)
C780	1-164-360-11	CERAMIC CHIP 0.1uF 16V	(TR83/TR93/TR600/TR670/TR880)
C781	1-162-974-11	CERAMIC CHIP 0.01uF 50V	(TR83/TR93/TR600/TR670/TR880)
C782	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	(TR83/TR93/TR600/TR670/TR880)
C783	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	(TR83/TR93/TR600/TR670/TR880)
C784	1-162-974-11	CERAMIC CHIP 0.01uF 50V	(TR83/TR93/TR600/TR670/TR880)
C785	1-162-974-11	CERAMIC CHIP 0.01uF 50V	(TR83/TR93/TR600/TR670/TR880)
C786	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	(TR83/TR93/TR600/TR670/TR880)
C788	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	(TR83/TR93/TR600/TR670/TR880)
C789	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V	(TR83/TR93/TR600/TR670/TR880)
C790	1-164-299-11	CERAMIC CHIP 0.22uF 10% 25V	(TR83/TR93/TR600/TR670/TR880)
C793	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	(TR83/TR93/TR600/TR670/TR880)
C794	1-164-360-11	CERAMIC CHIP 0.1uF 16V	(TR83/TR93/TR600/TR670/TR880)

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
* CN601	1-764-395-21	CONNECTOR, BOARD TO BOARD 42P	
CN701	1-750-630-11	CONNECTOR, FFC/FPC (ZIF) 16P	
CN751	1-764-528-11	CONNECTOR, FFC/FPC (ZIF) 21P	

Ref. No.	Part No.	Description	Remark
CN775	1-691-487-21	CONNECTOR, FFC/FPC 8P	(TR83/TR93/TR600/TR670/TR880)
		< TRIMMER >	
CT701	1-141-356-11	CAP, ADJ	
CT701	1-141-430-51	CAP, CHIP TRIMMER	
		< DIODE >	
D601	8-719-404-49	DIODE MA111	(TR83/TR93/TR600/TR670/TR880)
D701	8-719-404-46	DIODE MA110	
D701	8-719-404-49	DIODE MA111	
D702	8-719-404-46	DIODE MA110	
D702	8-719-404-49	DIODE MA111	
D703	8-719-404-46	DIODE MA110	
D703	8-719-404-49	DIODE MA111	
D705	8-719-404-46	DIODE MA110	
D705	8-719-404-49	DIODE MA111	
		< FILTER >	
FL601	1-239-352-11	FILTER, LOW PASS	(TR83/TR93/TR100/TR600/TR670/TR880)
FL601	1-239-766-11	FILTER, LOW PASS	(TR36/TR73/TR76/TR560)
		< IC >	
IC601	8-759-278-57	IC AK6420HF-E2	
IC602	8-759-344-95	IC SC424618-MC68HC11MA8FU	
IC603	8-759-635-27	IC M62352GP	
IC604	8-759-710-29	IC NJM2235M	(TR36/TR83)
IC609	8-752-375-10	IC CXD2150BR-T6	
IC610	8-752-365-72	IC CXD2151R-T6	
IC611	8-759-262-36	IC CXD2133BR-T6	
IC613	8-759-297-76	IC CXD2152AREL	(TR83/TR93/TR600/TR670/TR880)
IC614	8-759-328-91	IC uPD6461GS-811-GLG-E2	
IC701	8-752-355-07	IC CXD1267N-T4	
IC702	8-752-374-25	IC CXD2415R-T4	
IC703	8-752-073-11	IC CXA2006Q-T4	
IC704	8-759-331-07	IC AD43021-REEL	
IC705	8-752-373-69	IC CXD2407BR-T4	
IC751	8-759-701-24	IC NJM3414M	
IC752	8-759-058-50	IC BA10324AF-E2	
IC752	8-759-100-95	IC uPC324G2	
IC753	8-752-365-65	IC CXD2126N-T4	
IC754	8-759-247-07	IC MPC17A34VMEL	
IC755	8-759-209-15	IC TC4SU69F	
IC772	8-759-234-77	IC TC4S66F	(TR83/TR93/TR600/TR670/TR880)
IC773	8-759-234-77	IC TC4S66F	(TR83/TR93/TR600/TR670/TR880)

Ref. No.	Part No.	Description	Remark
IC774	8-759-058-45	IC NJM3403AV (TE2)	(TR83/TR93/TR600/TR670/TR880)
IC775	8-759-080-34	IC TA75W01FU-TE12R	(TR83/TR93/TR600/TR670/TR880)
IC776	8-759-248-78	IC MB88102PFV-G-BND-ER	(TR83/TR93/TR600/TR670/TR880)
IC778	8-752-865-22	IC CXP81120-003R	(TR83/TR93/TR600/TR670/TR880)
		< COIL >	
L601	1-412-058-11	INDUCTOR CHIP 10uH	
L602	1-414-078-11	INDUCTOR 10uH	
L603	1-412-058-11	INDUCTOR CHIP 10uH	
L604	1-414-078-11	INDUCTOR 10uH	
L605	1-410-391-11	INDUCTOR CHIP 68uH	
L606	1-414-078-11	INDUCTOR 10uH	
L607	1-414-078-11	INDUCTOR 10uH	(TR83/TR93/TR600/TR670/TR880)
L608	1-412-006-31	INDUCTOR CHIP 10uH	
L609	1-412-979-21	INDUCTOR 1uH	
L610	1-412-979-21	INDUCTOR 1uH	
L611	1-414-230-11	INDUCTOR, FERRITE BEAD	
L612	1-414-230-11	INDUCTOR, FERRITE BEAD	
L614	1-414-230-11	INDUCTOR, FERRITE BEAD	
L702	1-412-058-11	INDUCTOR CHIP 10uH	
L703	1-412-058-11	INDUCTOR CHIP 10uH	
L704	1-412-058-11	INDUCTOR CHIP 10uH	
L705	1-412-058-11	INDUCTOR CHIP 10uH	
L706	1-412-058-11	INDUCTOR CHIP 10uH	
L751	1-412-062-11	INDUCTOR CHIP 47uH	
L752	1-412-058-11	INDUCTOR CHIP 10uH	
L753	1-412-058-11	INDUCTOR CHIP 10uH	
L775	1-412-058-11	INDUCTOR CHIP 10uH	(TR83/TR93/TR600/TR670/TR880)
L777	1-414-078-11	INDUCTOR 10uH	(TR83/TR93/TR600/TR670/TR880)
L778	1-414-078-11	INDUCTOR 10uH	
		< TRANSISTOR >	
Q604	8-729-030-54	TRANSISTOR MSB1218A-RT1	
Q604	8-729-230-60	TRANSISTOR 2SA1586-YG	
Q604	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q605	8-729-030-54	TRANSISTOR MSB1218A-RT1	
Q605	8-729-230-60	TRANSISTOR 2SA1586-YG	
Q605	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q606	8-729-030-53	TRANSISTOR MSD1819A-RT1	
Q606	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q606	8-729-602-21	TRANSISTOR 2SC4154	
Q607	8-729-030-53	TRANSISTOR MSD1819A-RT1	
Q607	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q607	8-729-602-21	TRANSISTOR 2SC4154	

Ref.No.	Part No.	Description	Remark
Q701	8-729-403-27	TRANSISTOR XN4401	
Q751	8-729-030-53	TRANSISTOR MSD1819A-RT1	
Q751	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q751	8-729-602-21	TRANSISTOR 2SC4154	
Q752	8-729-013-88	TRANSISTOR RN1302-TE85L	
Q752	8-729-015-76	TRANSISTOR UN5211-TX	

< RESISTOR >

Ref.No.	Part No.	Description	Remark
R601	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R602	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R603	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R604	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R605	1-216-864-11	METAL CHIP 0 5% 1/16W	
R606	1-216-847-11	METAL CHIP 150K 5% 1/16W	(TR36/TR83)
R607	1-216-839-11	METAL CHIP 33K 5% 1/16W	(TR36/TR83)
R608	1-216-864-11	METAL CHIP 0 5% 1/16W	
R609	1-216-838-11	METAL CHIP 27K 5% 1/16W	(TR36/TR83)
R610	1-216-839-11	METAL CHIP 33K 5% 1/16W	(TR36/TR83)
R611	1-216-838-11	METAL CHIP 27K 5% 1/16W	(TR36/TR83)
R612	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R613	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R614	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(EXCEPT TR36/TR83)
R615	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(EXCEPT TR36/TR83)
R619	1-216-803-11	METAL CHIP 33 5% 1/16W	
R620	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R621	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R622	1-216-864-11	METAL CHIP 0 5% 1/16W	(EXCEPT TR36/TR83)
R624	1-216-864-11	METAL CHIP 0 5% 1/16W	
R626	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R627	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R628	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R629	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R630	1-216-864-11	METAL CHIP 0 5% 1/16W	
R631	1-216-864-11	METAL CHIP 0 5% 1/16W	
R634	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R635	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R636	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R637	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R638	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R639	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R640	1-216-815-11	METAL CHIP 330 5% 1/16W	
R642	1-216-864-11	METAL CHIP 0 5% 1/16W	
R643	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R644	1-216-841-11	METAL CHIP 47K 5% 1/16W	(TR36/TR73/TR76/TR100/TR560)
R645	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R646	1-216-818-11	METAL CHIP 560 5% 1/16W	
R647	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R648	1-216-818-11	METAL CHIP 560 5% 1/16W	
R649	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R650	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R651	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R652	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R653	1-216-864-11	METAL CHIP 0 5% 1/16W	
R655	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR36/TR73/TR76/TR560)
R656	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR36/TR73/TR76/TR560)
R657	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR83/TR93/TR100/TR600/TR670/TR880)
R658	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR83/TR93/TR100/TR600/TR670/TR880)
R659	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R661	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R662	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R663	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R664	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R665	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R666	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R667	1-216-820-11	METAL CHIP 820 5% 1/16W	
R668	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R669	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TR36/TR83)
R670	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TR36/TR83)
R701	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R702	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R703	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R705	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R709	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R711	1-216-864-11	METAL CHIP 0 5% 1/16W	
R713	1-216-803-11	METAL CHIP 33 5% 1/16W	
R714	1-216-864-11	METAL CHIP 0 5% 1/16W	
R715	1-216-864-11	METAL CHIP 0 5% 1/16W	
R716	1-218-847-11	METAL CHIP 1K 0.50% 1/16W	
R717	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR83/TR93/TR600/TR670/TR880)
R718	1-216-803-11	METAL CHIP 33 5% 1/16W	
R719	1-218-876-11	METAL CHIP 16K 0.50% 1/16W	
R723	1-216-864-11	METAL CHIP 0 5% 1/16W	
R725	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R726	1-216-864-11	METAL CHIP 0 5% 1/16W	
R727	1-216-864-11	METAL CHIP 0 5% 1/16W	
R728	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	(TR36/TR73/TR76/TR560)
R728	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR83/TR93/TR100/TR600/TR670/TR880)
R740	1-216-864-11	METAL CHIP 0 5% 1/16W	
R741	1-218-855-11	METAL CHIP 2.2K 0.50% 1/16W	
R742	1-218-865-11	METAL CHIP 5.6K 0.50% 1/16W	
R743	1-216-833-11	METAL CHIP 10K 5% 1/16W	

Ref. No.	Part No.	Description	Remark
R744	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R745	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R746	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R747	1-216-820-11	METAL CHIP 820 5% 1/16W	
R748	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R749	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R750	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R751	1-216-809-11	METAL CHIP 100 5% 1/16W	
R752	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R753	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R754	1-216-848-11	METAL CHIP 180K 5% 1/16W	
R755	1-216-855-11	METAL CHIP 680K 5% 1/16W	
R756	1-216-848-11	METAL CHIP 180K 5% 1/16W	
R757	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R758	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R759	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R760	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R761	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R762	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R764	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	(TR83/TR93/TR100/TR600/TR670/TR880)
R764	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR36/TR73/TR76/TR560)
R765	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TR83/TR93/TR600/TR670/TR880)
R766	1-216-835-11	METAL CHIP 15K 5% 1/16W	(TR83/TR93/TR600/TR670/TR880)
R767	1-216-850-11	METAL CHIP 270K 5% 1/16W	(TR83/TR93/TR600/TR670/TR880)
R768	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TR83/TR93/TR600/TR670/TR880)
R769	1-216-850-11	METAL CHIP 270K 5% 1/16W	(TR83/TR93/TR600/TR670/TR880)
R770	1-216-835-11	METAL CHIP 15K 5% 1/16W	(TR83/TR93/TR600/TR670/TR880)
R771	1-216-803-11	METAL CHIP 33 5% 1/16W	(TR83/TR93/TR600/TR670/TR880)
R772	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR83/TR93/TR600/TR670/TR880)
R773	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR83/TR93/TR600/TR670/TR880)
R774	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR83/TR93/TR600/TR670/TR880)
R775	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR83/TR93/TR600/TR670/TR880)
R776	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR83/TR93/TR600/TR670/TR880)
R777	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR83/TR93/TR600/TR670/TR880)
R778	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TR83/TR93/TR600/TR670/TR880)
R779	1-218-911-11	METAL CHIP 470K 0.50% 1/16W	(TR83/TR93/TR600/TR670/TR880)
R780	1-218-911-11	METAL CHIP 470K 0.50% 1/16W	(TR83/TR93/TR600/TR670/TR880)
R781	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TR83/TR93/TR600/TR670/TR880)
R782	1-218-911-11	METAL CHIP 470K 0.50% 1/16W	(TR83/TR93/TR600/TR670/TR880)
R783	1-218-911-11	METAL CHIP 470K 0.50% 1/16W	(TR83/TR93/TR600/TR670/TR880)
R784	1-216-841-11	METAL CHIP 47K 5% 1/16W	(TR36/TR73/TR76/TR100/TR560)
R786	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R787	1-216-841-11	METAL CHIP 47K 5% 1/16W	(TR83/TR93/TR600/TR670/TR880)
R788	1-216-841-11	METAL CHIP 47K 5% 1/16W	(TR83/TR93/TR600/TR670/TR880)
R789	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R790	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TR83/TR93/TR600/TR670/TR880)
R792	1-216-857-11	METAL CHIP 1M 5% 1/16W	(TR83/TR93/TR600/TR670/TR880)
R793	1-216-841-11	METAL CHIP 47K 5% 1/16W	(TR83/TR93/TR600/TR670/TR880)

< VIBRATOR >

Ref. No.	Part No.	Description	Remark
X601	1-760-081-21	VIBRATOR, CERAMIC (24MHz)	
X701	1-760-320-11	VIBRATOR, CRYSTAL (28.636MHz)	
X775	1-579-553-11	VIBRATOR (12MHz)	(TR36/TR83/TR93/TR600/TR670/TR880)

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A-7063-957-B VF-65 BOARD, COMPLETE (TR36/TR83/TR100)

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(Ref. No. 3,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description				Remark
C901	1-124-635-00	ELECT	220uF	20%	6.3V	
C902	1-163-038-91	CERAMIC CHIP	0.1uF		25V	
C903	1-135-091-91	TANTAL. CHIP	1uF	20%	16V	
C904	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V	
C905	1-104-753-11	TANTAL. CHIP	47uF	20%	6.3V	
C906	1-162-638-11	CERAMIC CHIP	1uF		16V	
C907	1-137-306-11	FILM CHIP	0.1uF	5%	16V	
C908	1-163-237-11	CERAMIC CHIP	27PF	5%	50V	
C909	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
⚠C910	1-164-758-11	CERAMIC CHIP	0.0039uF	5%	50V	
⚠C911	1-164-715-11	CERAMIC CHIP	0.0068uF	5%	50V	
C912	1-127-532-11	ELECT(SOLID)	47uF	20%	6.3V	
C913	1-124-577-11	ELECT	82uF	20%	10V	
C914	1-128-007-11	ELECT CHIP	2.2uF	20%	35V	
C915	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V	
C916	1-164-611-11	CERAMIC CHIP	0.001uF	10%	500V	

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Ref. No.	Part No.	Description	Remark
C917	1-165-319-11	CERAMIC CHIP 0.1uF	50V
		< CONNECTOR >	
CN901	1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P	
CN902	1-573-290-21	PIN, CONNECTOR (1.5MM)(SMD)4P	
		< DIODE >	
D901	8-719-404-19	DIODE LN1251C	
D903	8-719-400-20	DIODE MA152WA	
		< IC >	
IC901	8-759-196-14	IC BA7149F-E2	
		< COIL >	
L901	1-412-031-11	INDUCTOR CHIP 47uH	
L902	1-410-387-11	INDUCTOR CHIP 33uH	
⚠L903	1-402-680-21	COIL, FERRITE (HCL)	
		< TRANSISTOR >	
Q901	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q902	8-729-106-68	TRANSISTOR 2SD1615A-GP	
Q903	8-729-216-31	TRANSISTOR 2SA1163-G	
Q904	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
		< RESISTOR >	
R901	1-216-041-00	METAL CHIP 470 5% 1/10W	
R902	1-216-041-00	METAL CHIP 470 5% 1/10W	
R903	1-216-035-00	METAL CHIP 270 5% 1/10W	
R904	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R905	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R906	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R907	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R908	1-216-111-00	METAL CHIP 390K 5% 1/10W	
R909	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R910	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R911	1-216-160-00	METAL GLAZE 27 5% 1/8W	
R912	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R913	1-216-047-00	METAL CHIP 820 5% 1/10W	
R914	1-216-033-00	METAL CHIP 220 5% 1/10W	
R915	1-216-308-00	METAL CHIP 4.7 5% 1/10W	
R916	1-208-814-11	METAL CHIP 22K 0.50% 1/10W	
R917	1-208-824-11	METAL CHIP 56K 0.50% 1/10W	
R918	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R919	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R920	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R921	1-216-311-00	METAL CHIP 6.8 5% 1/10W	
R922	1-216-101-00	METAL CHIP 150K 5% 1/10W	
R923	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R924	1-216-131-11	METAL CHIP 2.7M 5% 1/10W	
R925	1-216-131-11	METAL CHIP 2.7M 5% 1/10W	

Ref. No.	Part No.	Description	Remark
R926	1-216-295-91	CONDUCTOR, CHIP (2012)	
R927	1-216-049-91	METAL GLAZE 1K 5% 1/10W	
R928	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R929	1-216-043-91	METAL GLAZE 560 5% 1/10W	
		< VARIABLE RESISTOR >	
RV903	1-238-086-11	RES, ADJ, CERMET 470	
RV903	1-238-852-11	RES, ADJ, CERMET 470	
RV904	1-223-566-11	RES, ADJ, METAL GLAZE 1M	
		< TRANSFORMER >	
⚠T901	1-453-124-11	TRANSFORMER ASSY, FLYBACK	
		< THERMISTOR >	
TH901	1-809-350-21	THERMISTOR, NTC (2125)	
		< SOCKET >	
W901	1-540-019-21	SOCKET ASSY, CRT	

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A-7072-211-A VF-72 BOARD, COMPLETE

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(EXCEPT TR36/TR83/TR100)

Ref. No.	Part No.	Description	Remark
		< CAPACITOR >	
C851	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C852	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C853	1-104-916-11	TANTAL. CHIP 6.8uF 20% 20V	
C854	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C855	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C856	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C857	1-164-676-11	CERAMIC CHIP 2200PF 5% 16V	
C858	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C859	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C860	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C865	1-162-921-11	CERAMIC CHIP 33PF 5% 50V	
C867	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C868	1-165-128-11	CERAMIC CHIP 0.22uF 16V	
C870	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
		< CONNECTOR >	
CN851	1-766-344-21	CONNECTOR, FFC/FPC 14P	
CN852	1-766-349-21	CONNECTOR, FFC/FPC 19P	
CN853	1-573-305-11	CONNECTOR, BOARD TO BOARD 10P	
		< DIODE >	
D851	8-719-989-22	DIODE CL-150R-CD	
D852	8-719-033-15	DIODE HN2D02FU-TE85R	
D852	8-719-043-70	DIODE MA6S121	

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Ref. No.	Part No.	Description	Remark
		< IC >	
IC851	8-759-097-75	IC MB3789PFV-G-BND-ER	
IC852	8-759-510-71	IC BA10358F-E2	
		< COIL >	
L853	1-412-033-11	INDUCTOR CHIP 220uH	
		< TRANSISTOR >	
Q852	8-729-427-74	TRANSISTOR XP4601	
Q853	8-729-924-19	TRANSISTOR DTA123JU	
		< RESISTOR >	
R851	1-216-819-11	METAL CHIP 680 5% 1/16W	
R852	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R853	1-218-899-11	METAL CHIP 150K 0.50% 1/16W	
R854	1-218-901-11	METAL CHIP 180K 0.50% 1/16W	
R855	1-218-972-11	METAL GLAZE 39K 5% 1/16W	
R856	1-218-899-11	METAL CHIP 150K 0.50% 1/16W	
R857	1-218-903-11	METAL CHIP 220K 0.50% 1/16W	
R858	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R859	1-218-901-11	METAL CHIP 180K 0.50% 1/16W	
R860	1-218-887-11	METAL CHIP 47K 0.50% 1/16W	
R861	1-218-975-11	METAL GLAZE 68K 5% 1/16W	
R862	1-218-970-11	METAL GLAZE 27K 5% 1/16W	
R863	1-218-979-11	METAL GLAZE 150K 5% 1/16W	
R864	1-218-972-11	METAL GLAZE 39K 5% 1/16W	
R865	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R867	1-218-982-11	METAL GLAZE 270K 5% 1/16W	
R868	1-218-990-11	CONDCTOR, CHIP (1005)	
R869	1-218-975-11	METAL GLAZE 68K 5% 1/16W	
R870	1-218-974-11	METAL GLAZE 56K 5% 1/16W	
R871	1-218-982-11	METAL GLAZE 270K 5% 1/16W	
R872	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R873	1-218-983-11	METAL GLAZE 330K 5% 1/16W	
R874	1-218-979-11	METAL GLAZE 150K 5% 1/16W	
R875	1-218-961-11	METAL GLAZE 4.7K 5% 1/16W	
R876	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R877	1-216-794-11	METAL CHIP 5.6 5% 1/16W	
R879	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R881	1-218-985-11	METAL GLAZE 470K 5% 1/16W	
R891	1-216-296-00	METAL CHIP 0 5% 1/8W	

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Ref. No.	Part No.	Description	Remark
	A-7072-212-A	VF-73 BOARD, COMPLETE	
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		(EXCEPT TR36/TR83/TR100) (Ref. No. 5,000 Series)	
		< CAPACITOR >	
C901	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C902	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C903	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C904	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C905	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C906	1-162-969-11	CERAMIC CHIP 0.0068uF 10% 25V	
C907	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C908	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	
C909	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C910	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C911	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C913	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C914	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C915	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C916	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C917	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C920	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
C921	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C925	1-162-995-11	CERAMIC CHIP 0.022uF 50V	
C926	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C927	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C928	1-135-176-21	TANTALUM CHIP 0.68uF 10% 20V	
C929	1-135-176-21	TANTALUM CHIP 0.68uF 10% 20V	
C930	1-135-176-21	TANTALUM CHIP 0.68uF 10% 20V	
C931	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C932	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C933	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C934	1-165-320-11	CERAMIC CHIP 0.47uF 10% 16V	
C935	1-135-179-21	TANTAL. CHIP 2.2uF 20% 16V	
C936	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C937	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C938	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C939	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C940	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C941	1-164-357-11	CERAMIC CHIP 1000PF 5% 50V	
C942	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C943	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C945	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C946	1-135-179-21	TANTAL. CHIP 2.2uF 20% 16V	
C947	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C948	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C949	1-135-178-11	TANTAL. CHIP 1.5uF 20% 20V	
C950	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C951	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C953	1-164-346-11	CERAMIC CHIP 1uF 16V	

Ref. No.	Part No.	Description	Remark
C954	1-162-974-11	CERAMIC CHIP 0.01uF	50V
		< CONNECTOR >	
CN901	1-766-345-21	CONNECTOR, FFC/FPC 15P	
* CN902	1-573-984-11	CONNECTOR, BOARD TO BOARD 10P	
CN903	1-573-925-11	CONNECTOR, FFC/FPC (ZIF) 16P	
CN903	1-766-677-21	CONNECTOR, FFC/FPC 16P	
		< DIODE >	
D901	8-713-102-80	DIODE 1T369-01-T8A	
D903	8-719-404-46	DIODE MA110	
D903	8-719-404-49	DIODE MA111	
		< IC >	
IC901	8-752-067-59	IC CXA1785R-T4	
IC902	8-752-371-14	IC CXD2403AR-T4	
IC903	8-759-251-40	IC MB88E346PFV-G-BND-ER	
		< COIL >	
L901	1-412-951-11	INDUCTOR 10uH	
L902	1-412-962-11	INDUCTOR 82uH	
L904	1-412-959-11	INDUCTOR 47uH	
L905	1-412-949-21	INDUCTOR 6.8uH	
L906	1-412-962-11	INDUCTOR 82uH	
		< TRANSISTOR >	
Q901	8-729-427-74	TRANSISTOR XP4601	
Q902	8-729-402-42	TRANSISTOR UN5213	
		< RESISTOR >	
R902	1-218-877-11	METAL CHIP 18K 0.50% 1/16W	
R903	1-218-974-11	METAL GLAZE 56K 5% 1/16W	
R904	1-218-989-11	METAL GLAZE 1M 5% 1/16W	
R906	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R907	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R908	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R910	1-218-946-11	METAL GLAZE 270 5% 1/16W	
R911	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R912	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R914	1-218-964-11	METAL GLAZE 8.2K 5% 1/16W	
R915	1-218-955-11	METAL GLAZE 1.5K 5% 1/16W	
R919	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R920	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R921	1-220-397-11	METAL GLAZE 4.7M 5% 1/16W	
R922	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R923	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R924	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R925	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R926	1-218-973-11	METAL GLAZE 47K 5% 1/16W	
R930	1-218-965-11	METAL GLAZE 10K 5% 1/16W	
R931	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R933	1-218-990-11	CONDCTOR, CHIP (1005)	
R934	1-218-953-11	METAL GLAZE 1K 5% 1/16W	
R936	1-218-873-11	METAL CHIP 12K 0.50% 1/16W	
R937	1-218-905-11	METAL CHIP 270K 0.50% 1/16W	
R938	1-218-981-11	METAL GLAZE 220K 5% 1/16W	
R939	1-218-969-11	METAL GLAZE 22K 5% 1/16W	
R943	1-218-990-11	CONDCTOR, CHIP (1005)	
R947	1-218-939-11	METAL GLAZE 68 5% 1/16W	
R948	1-218-939-11	METAL GLAZE 68 5% 1/16W	
R949	1-218-939-11	METAL GLAZE 68 5% 1/16W	
R953	1-218-972-11	METAL GLAZE 39K 5% 1/16W	
R954	1-218-972-11	METAL GLAZE 39K 5% 1/16W	
R959	1-218-976-11	METAL GLAZE 82K 5% 1/16W	
R960	1-218-977-11	METAL GLAZE 100K 5% 1/16W	
R961	1-218-982-11	METAL GLAZE 270K 5% 1/16W	
R969	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R970	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R971	1-218-978-11	METAL GLAZE 120K 5% 1/16W	
R973	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R974	1-218-971-11	METAL GLAZE 33K 5% 1/16W	
R979	1-218-981-11	METAL GLAZE 220K 5% 1/16W	
		< VIBRATOR >	
X901	1-579-466-11	VIBRATOR, CRYSTAL (3.58MHz)	

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A-7066-365-A VS-125 BOARD, COMPLETE (TR83)
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A-7066-403-A VS-125 BOARD, COMPLETE (TR93/TR670)
****

A-7066-406-A VS-125 BOARD, COMPLETE (TR100)
****

A-7066-409-A VS-125 BOARD, COMPLETE (TR73/TR76/TR560)
****

A-7066-419-A VS-125 BOARD, COMPLETE (TR36)
****

A-7066-482-A VS-125 BOARD, COMPLETE (TR600/TR880)
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Ref. No.	Part No.	Description	Remark
		< CAPACITOR >	
C101	1-162-921-11	CERAMIC CHIP 33PF 5% 50V	(EXCEPT TR100/TR600/TR880)
C102	1-162-911-11	CERAMIC CHIP 6PF 0.5PF 50V	(TR100/TR600/TR880)
C102	1-162-922-11	CERAMIC CHIP 39PF 5% 50V	(EXCEPT TR100/TR600/TR880)
C103	1-162-974-11	CERAMIC CHIP 0.01uF 50V	

Ref. No.	Part No.	Description	Remark
C104	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C106	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C107	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C108	1-162-926-11	CERAMIC CHIP 82PF 5% 50V	
C109	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C110	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C111	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C112	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C113	1-164-217-11	CERAMIC CHIP 150PF 5% 50V	
C114	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C115	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C116	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C117	1-104-852-11	TANTAL. CHIP 22uF 20% 6.3V	
C118	1-104-852-11	TANTAL. CHIP 22uF 20% 6.3V	
C119	1-162-961-11	CERAMIC CHIP 330PF 10% 50V	
C120	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C121	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C122	1-162-961-11	CERAMIC CHIP 330PF 10% 50V	
C123	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C124	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C128	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C131	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C134	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C136	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C137	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	
C143	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V	
C144	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C145	1-104-852-11	TANTAL. CHIP 22uF 20% 6.3V	
C146	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C147	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C148	1-162-958-11	CERAMIC CHIP 270PF 5% 50V	
C149	1-162-974-11	CERAMIC CHIP 0.01uF 50V	(EXCEPT TR100/TR600/TR880)
C150	1-162-974-11	CERAMIC CHIP 0.01uF 50V	(EXCEPT TR100/TR600/TR880)
C151	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	(EXCEPT TR100/TR600/TR880)
C152	1-162-974-11	CERAMIC CHIP 0.01uF 50V	(EXCEPT TR100/TR600/TR880)
C153	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C154	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	(EXCEPT TR100/TR600/TR880)
C155	1-162-974-11	CERAMIC CHIP 0.01uF 50V	(TR100/TR600/TR880)
C157	1-162-916-11	CERAMIC CHIP 12PF 5% 50V	
C158	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	(EXCEPT TR100/TR600/TR880)
C159	1-162-922-11	CERAMIC CHIP 39PF 5% 50V	(EXCEPT TR100/TR600/TR880)
C160	1-162-920-11	CERAMIC CHIP 27PF 5% 50V	(EXCEPT TR100/TR600/TR880)
C161	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	
C163	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(EXCEPT TR100/TR600/TR880)
C164	1-162-916-11	CERAMIC CHIP 12PF 5% 50V	(EXCEPT TR100/TR600/TR880)
C165	1-164-217-11	CERAMIC CHIP 150PF 5% 50V	(EXCEPT TR100/TR600/TR880)
C166	1-162-958-11	CERAMIC CHIP 270PF 5% 50V	
C167	1-162-926-11	CERAMIC CHIP 82PF 5% 50V	(EXCEPT TR100/TR600/TR880)
C168	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	(EXCEPT TR100/TR600/TR880)
C169	1-162-923-11	CERAMIC CHIP 47PF 5% 50V	(EXCEPT TR100/TR600/TR880)
C170	1-162-915-11	CERAMIC CHIP 10PF 0.5PF 50V	(TR100/TR600/TR880)
C171	1-162-920-11	CERAMIC CHIP 27PF 5% 50V	(TR100/TR600/TR880)
C172	1-162-921-11	CERAMIC CHIP 33PF 5% 50V	(EXCEPT TR100/TR600/TR880)
C173	1-164-155-11	CERAMIC CHIP 75PF 5% 50V	(TR100/TR600/TR880)
C175	1-162-915-11	CERAMIC CHIP 10PF 0.5PF 50V	(TR100/TR600/TR880)
C176	1-162-922-11	CERAMIC CHIP 39PF 5% 50V	(TR100/TR600/TR880)
C177	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C178	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C179	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C190	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C202	1-162-918-11	CERAMIC CHIP 18PF 5% 50V	(TR100/TR600/TR880)
C203	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C204	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C205	1-162-974-11	CERAMIC CHIP 0.01uF 50V	(TR36/TR83)
C206	1-164-489-11	CERAMIC CHIP 0.22uF 10% 16V	
C207	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C208	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
C209	1-126-246-11	ELECT CHIP 220uF 20% 4V	
C210	1-162-961-11	CERAMIC CHIP 330PF 10% 50V	
C211	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C212	1-162-995-11	CERAMIC CHIP 0.022uF 50V	
C213	1-135-176-21	TANTALUM CHIP 0.68uF 10% 20V	
C214	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C215	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C216	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C217	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C218	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C220	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C221	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C222	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C223	1-164-360-11	CERAMIC CHIP 0.1uF 16V	

Ref.No.	Part No.	Description				Remark
C225	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C226	1-162-926-11	CERAMIC CHIP	82PF	5%	50V	
C227	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C228	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C229	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C230	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V	
C231	1-164-005-11	CERAMIC CHIP	0.47uF		25V	
C234	1-162-957-11	CERAMIC CHIP	220PF	5%	50V	
C235	1-126-207-11	ELECT CHIP	33uF	20%	4V	
C237	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C238	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C239	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C240	1-164-392-11	CERAMIC CHIP	390PF	5%	50V	
C241	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C242	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C243	1-107-682-11	CERAMIC CHIP	1uF	10%	16V	
C244	1-162-959-11	CERAMIC CHIP	330PF	5%	50V	
C245	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C247	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C248	1-164-217-11	CERAMIC CHIP	150PF	5%	50V	(TR100/TR600/TR880)
C250	1-164-217-11	CERAMIC CHIP	150PF	5%	50V	(TR100/TR600/TR880)
C251	1-162-926-11	CERAMIC CHIP	82PF	5%	50V	(TR100/TR600/TR880)
C251	1-164-218-11	CERAMIC CHIP	180PF	0.25PF	50V	(EXCEPT TR100/TR600/TR880)
C258	1-164-346-11	CERAMIC CHIP	1uF		16V	
C262	1-162-974-11	CERAMIC CHIP	0.01uF		50V	(EXCEPT TR100/TR600/TR880)
C263	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C264	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V	
C265	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	(EXCEPT TR100/TR600/TR880)
C266	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C267	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V	
C268	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C271	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C272	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V	
C273	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C274	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C275	1-164-217-11	CERAMIC CHIP	150PF	5%	50V	(EXCEPT TR100/TR600/TR880)
C276	1-162-918-11	CERAMIC CHIP	18PF	5%	50V	(EXCEPT TR100/TR600/TR880)
C278	1-162-909-11	CERAMIC CHIP	4PF	0.25PF	50V	
C279	1-164-392-11	CERAMIC CHIP	390PF	5%	50V	(EXCEPT TR100/TR600/TR880)
C281	1-162-928-11	CERAMIC CHIP	120PF	5%	50V	(EXCEPT TR100/TR600/TR880)
C282	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	(EXCEPT TR100/TR600/TR880)
C284	1-162-921-11	CERAMIC CHIP	33PF	5%	50V	
C285	1-135-318-11	TANTAL. CHIP	33uF	20%	4V	(EXCEPT TR100/TR600/TR880)
C286	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C287	1-162-923-11	CERAMIC CHIP	47PF	5%	50V	(EXCEPT TR100/TR600/TR880)
C289	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V	
C290	1-162-974-11	CERAMIC CHIP	0.01uF		50V	(EXCEPT TR100/TR600/TR880)
C291	1-162-923-11	CERAMIC CHIP	47PF	5%	50V	(EXCEPT TR100/TR600/TR880)
C292	1-164-346-11	CERAMIC CHIP	1uF		16V	(TR100/TR600/TR880)
C293	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V	
C294	1-162-974-11	CERAMIC CHIP	0.01uF		50V	(TR100/TR600/TR880)
C295	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V	(TR100/TR600/TR880)
C296	1-162-974-11	CERAMIC CHIP	0.01uF		50V	(TR100/TR600/TR880)
C297	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V	(TR100/TR600/TR880)
C298	1-164-360-11	CERAMIC CHIP	0.1uF		16V	(TR100/TR600/TR880)
C299	1-162-974-11	CERAMIC CHIP	0.01uF		50V	(EXCEPT TR100/TR600/TR880)
C300	1-162-974-11	CERAMIC CHIP	0.01uF		50V	(TR100/TR600/TR880)
C301	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	(EXCEPT TR100/TR600/TR880)
C302	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V	(TR100/TR600/TR880)
C303	1-162-974-11	CERAMIC CHIP	0.01uF		50V	(TR100/TR600/TR880)
C304	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	(TR100/TR600/TR880)
C305	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	(EXCEPT TR100/TR600/TR880)
C306	1-162-921-11	CERAMIC CHIP	33PF	5%	50V	(TR100/TR600/TR880)
C307	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C308	1-162-919-11	CERAMIC CHIP	22PF	5%	50V	
C310	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C311	1-164-360-11	CERAMIC CHIP	0.1uF		16V	(TR100/TR600/TR880)
C312	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C314	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C315	1-162-923-11	CERAMIC CHIP	47PF	5%	50V	
C316	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C322	1-164-360-11	CERAMIC CHIP	0.1uF		16V	(TR36/TR83)
C323	1-164-360-11	CERAMIC CHIP	0.1uF		16V	(TR36/TR83)

Ref. No.	Part No.	Description				Remark
C324	1-162-974-11	CERAMIC CHIP	0.01uF		50V	(TR36/TR83)
C328	1-164-361-11	CERAMIC CHIP	0.047uF		16V	
C331	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C333	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V	
C334	1-162-909-11	CERAMIC CHIP	4PF	0.25PF	50V	
C398	1-162-924-11	CERAMIC CHIP	56PF	5%	50V	(TR100/TR600/TR880)
C500	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C501	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C502	1-164-361-11	CERAMIC CHIP	0.047uF		16V	
C503	1-124-778-00	ELECT CHIP	22uF	20%	6.3V	
C504	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C506	1-124-778-00	ELECT CHIP	22uF	20%	6.3V	
C507	1-162-918-11	CERAMIC CHIP	18PF	5%	50V	
C508	1-162-919-11	CERAMIC CHIP	22PF	5%	50V	
C509	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C510	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C511	1-164-361-11	CERAMIC CHIP	0.047uF		16V	
C512	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C513	1-164-361-11	CERAMIC CHIP	0.047uF		16V	
C514	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C515	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C516	1-164-361-11	CERAMIC CHIP	0.047uF		16V	
C518	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C519	1-164-346-11	CERAMIC CHIP	1uF		16V	
C521	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C522	1-164-361-11	CERAMIC CHIP	0.047uF		16V	
C523	1-164-492-11	CERAMIC CHIP	0.15uF	10%	16V	
C524	1-164-492-11	CERAMIC CHIP	0.15uF	10%	16V	
C526	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C527	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C528	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C529	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V	
C530	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C531	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C532	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C533	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C534	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C535	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V	
C536	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V	
C537	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C538	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C539	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C540	1-162-913-11	CERAMIC CHIP	8PF	0.5PF	50V	
C541	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C543	1-162-913-11	CERAMIC CHIP	8PF	0.5PF	50V	
C544	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C545	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C547	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C548	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C549	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C550	1-128-530-11	ELECT CHIP	33uF	20%	10V	
C559	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C560	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C561	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C562	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C563	1-162-957-11	CERAMIC CHIP	220PF	5%	50V	
C564	1-162-957-11	CERAMIC CHIP	220PF	5%	50V	
C565	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C566	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C567	1-164-173-11	CERAMIC CHIP	0.0039uF	10%	50V	
C568	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C569	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C570	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C571	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C572	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C573	1-162-909-11	CERAMIC CHIP	4PF	0.25PF	50V	
C951	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C953	1-126-205-11	ELECT CHIP	47uF	20%	6.3V	
C955	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C959	1-164-156-11	CERAMIC CHIP	0.1uF		25V	(TR36/TR83)
C961	1-164-346-11	CERAMIC CHIP	1uF		16V	(TR36/TR83)
C1251	1-164-156-11	CERAMIC CHIP	0.1uF		25V	(EXCEPT TR36/TR83)
C1252	1-164-505-11	CERAMIC CHIP	2.2uF		16V	(EXCEPT TR36/TR83)
C1254	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(TR100/TR600/TR880)
C1255	1-164-005-11	CERAMIC CHIP	0.47uF		25V	(TR100/TR600/TR880)
C1256	1-164-005-11	CERAMIC CHIP	0.47uF		25V	(EXCEPT TR36/TR83)
C1257	1-126-246-11	ELECT CHIP	220uF	20%	4V	(TR100/TR600/TR880)
C1258	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V	(TR100/TR600/TR880)
C1260	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(TR100/TR600/TR880)
C1261	1-164-156-11	CERAMIC CHIP	0.1uF		25V	(TR100/TR600/TR880)
C1262	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	(TR100/TR600/TR880)
C1263	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	(EXCEPT TR36/TR83)
C1264	1-164-156-11	CERAMIC CHIP	0.1uF		25V	(EXCEPT TR36/TR83)
C1268	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	(EXCEPT TR36/TR83)
C1274	1-164-005-11	CERAMIC CHIP	0.47uF		25V	(TR100)
C1275	1-162-919-11	CERAMIC CHIP	22PF	5%	50V	(TR100)

Ref. No.	Part No.	Description	Remark
		< CONNECTOR >	
CN101	1-691-492-21	CONNECTOR, FFC/FPC 13P	
CN102	1-580-789-21	PIN, CONNECTOR (SMD) 6P	
CN201	1-766-343-21	CONNECTOR, FFC/FPC 13P	
* CN202	1-691-929-11	CONNECTOR, BOARD TO BOARD 34P	
* CN203	1-764-396-21	CONNECTOR, BOARD TO BOARD 42P	
* CN205	1-573-313-11	CONNECTOR, BOARD TO BOARD 26P (TR100/TR600/TR880)	
CN206	1-766-344-21	CONNECTOR, FFC/FPC 14P	
CN501	1-766-354-21	CONNECTOR, FFC/FPC 24P	
CN502	1-764-708-11	CONNECTOR, FFC/FPC (LIF) 9P	
CN503	1-764-717-11	CONNECTOR, FFC/FPC (LIF) 18P	
CN504	1-695-325-11	CONNECTOR, BOARD TO BOARD 42P	
* CN505	1-764-397-21	CONNECTOR, BOARD TO BOARD 42P	
		< DIODE >	
D101	8-719-800-76	DIODE 1SS226 (EXCEPT TR100/TR600/TR880)	
D201	8-719-027-50	DIODE MA142WK-(TX)	
D204	8-719-027-50	DIODE MA142WK-(TX)	
D208	8-719-027-50	DIODE MA142WK-(TX)	
D216	8-719-027-50	DIODE MA142WK-(TX)	
D217	8-719-404-49	DIODE MA111	
D218	8-719-800-76	DIODE 1SS226	
D219	8-719-404-49	DIODE MA111	
D321	8-719-052-33	DIODE MAZV082DFL	
D323	8-719-017-25	DIODE 02DZ13-TPH3 (TR100/TR600/TR880)	
D324	8-719-017-25	DIODE 02DZ13-TPH3 (TR100/TR600/TR880)	
⚠D501	8-719-421-27	DIODE MA728	
D504	8-719-404-49	DIODE MA111	
D505	8-719-404-49	DIODE MA111	
D506	8-719-404-49	DIODE MA111	
D1251	8-719-027-50	DIODE MA142WK-(TX)(EXCEPT TR36/TR83)	
D1252	8-719-027-50	DIODE MA142WK-(TX)(TR100/TR600/TR880)	
D1253	8-719-052-33	DIODE MAZV082DFL (TR100/TR600/TR880)	
D1254	8-719-052-33	DIODE MAZV082DFL (TR100/TR600/TR880)	
D1255	8-719-017-25	DIODE 02DZ13-TPH3 (TR100/TR600/TR880)	
		< FILTER >	
FL202	1-236-773-21	FILTER, LOW PASS (Y)(TR100/TR600/TR880)	
		< IC >	
IC102	8-752-069-78	IC CXA1704R-T4	
IC201	8-752-072-54	IC CXA1700AR-T6 (EXCEPT TR100/TR600/TR880)	
IC201	8-752-072-55	IC CXA1810AR-T6 (TR100/TR600/TR880)	
IC203	8-752-351-22	IC CXL5502N-T4	
IC204	8-752-351-22	IC CXL5502N-T4 (TR100/TR600/TR880)	
IC205	8-752-053-21	IC CXA1211M	
IC208	8-759-710-07	IC NJM2234M (TR36/TR83)	

Ref. No.	Part No.	Description	Remark
IC209	8-759-327-93	IC TK16031AMTL	
IC251	8-752-069-60	IC CXA1812Q-T4 (EXCEPT TR36/TR83)	
IC501	8-759-278-57	IC AK6420HF-E2	
IC502	8-759-295-62	IC S-8423DFS-T2	
IC503	8-759-328-92	IC MB89098PFV-G-127-BND	
IC505	8-752-862-21	IC CXP87132-043R	
IC506	8-759-169-11	IC CXA1575M-E2	
IC508	8-759-267-62	IC MB4470APFQ-G-BND-ER	
IC951	8-759-169-02	IC MB88344BPFV-G-BND-ER	
IC951	8-759-290-12	IC M62370GP-650D	
		< COIL >	
L102	1-412-066-21	INDUCTOR CHIP 220uH	
L102	1-414-275-11	INDUCTOR 220uH	
L103	1-412-066-21	INDUCTOR CHIP 220uH	
L103	1-414-275-11	INDUCTOR 220uH	
L104	1-412-951-11	INDUCTOR 10uH	
L105	1-412-066-21	INDUCTOR CHIP 220uH	
L105	1-414-275-11	INDUCTOR 220uH	
L108	1-412-060-11	INDUCTOR CHIP 22uH	
L108	1-414-269-21	INDUCTOR 22uH	
L109	1-412-957-11	INDUCTOR 33uH	
L110	1-410-657-21	INDUCTOR CHIP 180uH (EXCEPT TR100/TR600/TR880)	
L111	1-412-950-11	INDUCTOR 8.2uH(EXCEPT TR100/TR600/TR880)	
L112	1-412-280-31	INDUCTOR 330uH	
L113	1-412-957-11	INDUCTOR 33uH (EXCEPT TR100/TR600/TR880)	
L114	1-412-282-41	INDUCTOR 470uH	
L115	1-412-280-31	INDUCTOR 330uH(EXCEPT TR100/TR600/TR880)	
L116	1-410-657-21	INDUCTOR CHIP 180uH	
L118	1-410-655-31	INDUCTOR CHIP 120uH (EXCEPT TR100/TR600/TR880)	
L119	1-412-958-21	INDUCTOR 39uH (TR100/TR600/TR880)	
L120	1-412-951-11	INDUCTOR 10uH (EXCEPT TR100/TR600/TR880)	
L121	1-412-951-11	INDUCTOR 10uH (TR100/TR600/TR880)	
L122	1-412-058-11	INDUCTOR CHIP 10uH	
L122	1-414-267-11	INDUCTOR 10uH	
L123	1-412-949-21	INDUCTOR 6.8uH (TR100/TR600/TR880)	
L201	1-412-963-11	INDUCTOR 100uH (TR100/TR600/TR880)	
L202	1-414-078-11	INDUCTOR 10uH	
L203	1-412-955-11	INDUCTOR 22uH	
L204	1-412-963-11	INDUCTOR 100uH(EXCEPT TR100/TR600/TR880)	
L207	1-412-945-11	INDUCTOR 3.3uH(EXCEPT TR100/TR600/TR880)	
L209	1-412-960-21	INDUCTOR 56uH (EXCEPT TR100/TR600/TR880)	
L210	1-412-954-11	INDUCTOR 18uH	
L211	1-412-955-11	INDUCTOR 22uH	
L213	1-412-953-11	INDUCTOR 15uH (EXCEPT TR100/TR600/TR880)	
L214	1-412-962-11	INDUCTOR 82uH (EXCEPT TR100/TR600/TR880)	
L399	1-412-951-11	INDUCTOR 10uH (TR100/TR600/TR880)	
L500	1-414-078-11	INDUCTOR 10uH	

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Ref. No.	Part No.	Description	Remark
L501	1-414-078-11	INDUCTOR 10uH	
L503	1-412-961-11	INDUCTOR 68uH	
L504	1-414-078-11	INDUCTOR 10uH	
L506	1-414-078-11	INDUCTOR 10uH	
L951	1-414-078-11	INDUCTOR 10uH	
L952	1-414-072-11	INDUCTOR 1uH	
L1251	1-414-078-11	INDUCTOR 10uH	(TR100/TR600/TR880)
L1252	1-414-078-11	INDUCTOR 10uH	(EXCEPT TR36/TR83)
L1253	1-412-963-11	INDUCTOR 100uH	(TR100)

< IC LINK >

Ref. No.	Part No.	Description	Remark
⚠PS500	1-576-122-21	LINK, IC	
⚠PS501	1-576-122-21	LINK, IC	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q101	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q102	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q103	8-729-216-22	TRANSISTOR 2SA1162	
Q104	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q105	8-729-402-42	TRANSISTOR UN5213	
Q106	8-729-402-42	TRANSISTOR UN5213	
Q109	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q111	8-729-015-74	TRANSISTOR UN5111-TX	(EXCEPT TR100/TR600/TR880)
Q112	8-729-117-73	TRANSISTOR 2SC4178-F14	(EXCEPT TR100/TR600/TR880)
Q113	8-729-420-24	TRANSISTOR 2SB1218A-QRS	(EXCEPT TR100/TR600/TR880)
Q114	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q115	8-729-012-50	TRANSISTOR 2SC4400-3/4/5	(EXCEPT TR100/TR600/TR880)
Q116	8-729-012-50	TRANSISTOR 2SC4400-3/4/5	(TR100/TR600/TR880)
Q117	8-729-230-63	TRANSISTOR 2SC4116-YG	(EXCEPT TR100/TR600/TR880)
Q118	8-729-420-24	TRANSISTOR 2SB1218A-QRS	(TR100/TR600/TR880)
Q119	8-729-230-63	TRANSISTOR 2SC4116-YG	(EXCEPT TR100/TR600/TR880)
Q120	8-729-402-42	TRANSISTOR UN5213	(TR100/TR600/TR880)
Q121	8-729-012-50	TRANSISTOR 2SC4400-3/4/5	(TR100/TR600/TR880)
Q124	8-729-230-63	TRANSISTOR 2SC4116-YG	(TR100/TR600/TR880)
Q125	8-729-402-42	TRANSISTOR UN5213	(TR100/TR600/TR880)
Q126	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q129	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q132	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q133	8-729-012-50	TRANSISTOR 2SC4400-3/4/5	
Q134	8-729-402-48	TRANSISTOR UN521E-TX	
Q135	8-729-402-48	TRANSISTOR UN521E-TX	
Q136	8-729-420-53	TRANSISTOR UN5115	(TR100/TR600/TR880)

Ref. No.	Part No.	Description	Remark
Q202	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q204	8-729-402-42	TRANSISTOR UN5213	
Q217	8-729-420-12	TRANSISTOR XN4213	(EXCEPT TR100/TR600/TR880)
Q219	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q221	8-729-013-15	TRANSISTOR 2SC4909-TL	(TR100/TR600/TR880)
Q222	8-729-403-35	TRANSISTOR UN5113	(TR100/TR600/TR880)
Q223	8-729-013-15	TRANSISTOR 2SC4909-TL	(TR100/TR600/TR880)
Q224	8-729-402-42	TRANSISTOR UN5213	(TR100/TR600/TR880)
Q225	8-729-015-76	TRANSISTOR UN5211-TX	
Q226	8-729-807-86	TRANSISTOR 2SB1295-UL5	
Q227	8-729-402-42	TRANSISTOR UN5213	
Q228	8-729-807-86	TRANSISTOR 2SB1295-UL5	
Q230	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q232	8-729-420-24	TRANSISTOR 2SB1218A-QRS	(EXCEPT TR100/TR600/TR880)
Q234	8-729-230-63	TRANSISTOR 2SC4116-YG	(EXCEPT TR100/TR600/TR880)
Q235	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q236	8-729-230-63	TRANSISTOR 2SC4116-YG	(EXCEPT TR100/TR600/TR880)
Q237	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q238	8-729-230-63	TRANSISTOR 2SC4116-YG	(EXCEPT TR100/TR600/TR880)
Q240	8-729-230-63	TRANSISTOR 2SC4116-YG	(EXCEPT TR100/TR600/TR880)
Q242	8-729-420-24	TRANSISTOR 2SB1218A-QRS	(EXCEPT TR100/TR600/TR880)
Q243	8-729-402-42	TRANSISTOR UN5213	(TR100/TR600/TR880)
Q244	8-729-402-42	TRANSISTOR UN5213	
Q246	8-729-402-81	TRANSISTOR XN4501	(EXCEPT TR100/TR600/TR880)
Q247	8-729-402-42	TRANSISTOR UN5213	(EXCEPT TR100/TR600/TR880)
Q248	8-729-420-24	TRANSISTOR 2SB1218A-QRS	(TR100/TR600/TR880)
Q249	8-729-230-63	TRANSISTOR 2SC4116-YG	(TR100/TR600/TR880)
Q253	8-729-420-56	TRANSISTOR UN511E	
Q254	8-729-403-35	TRANSISTOR UN5113	
Q255	8-729-230-63	TRANSISTOR 2SC4116-YG	(TR100/TR600/TR880)
Q256	8-729-230-63	TRANSISTOR 2SC4116-YG	(EXCEPT TR100/TR600/TR880)
Q257	8-729-230-63	TRANSISTOR 2SC4116-YG	(EXCEPT TR100/TR600/TR880)
Q258	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q259	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q260	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q261	8-729-230-63	TRANSISTOR 2SC4116-YG	(TR36/TR83)
Q265	8-729-823-16	TRANSISTOR 2SC4555-5. 6. 7	

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Ref. No.	Part No.	Description	Remark
Q266	8-729-402-42	TRANSISTOR UN5213	(EXCEPT TR100/TR600/TR880)
Q267	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q500	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q501	8-729-403-27	TRANSISTOR XN4401	
Q502	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q503	8-729-402-81	TRANSISTOR XN4501	
Q504	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q506	8-729-402-42	TRANSISTOR UN5213	
Q507	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q508	8-729-807-87	TRANSISTOR 2SB1295-UL6	
Q509	8-729-420-20	TRANSISTOR XN4312	
Q510	8-729-402-42	TRANSISTOR UN5213	
Q511	8-729-402-42	TRANSISTOR UN5213	
Q951	8-729-101-07	TRANSISTOR 2SB798-DL	
Q952	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q956	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q958	8-729-230-63	TRANSISTOR 2SC4116-YG	(TR36/TR83)
Q960	8-729-230-63	TRANSISTOR 2SC4116-YG	(TR36/TR83)
Q1252	8-729-402-42	TRANSISTOR UN5213	(EXCEPT TR36/TR83)
Q1253	8-729-823-16	TRANSISTOR 2SC4555-5.6.7	(TR100/TR600/TR880)
Q1254	8-729-823-16	TRANSISTOR 2SC4555-5.6.7	(TR100/TR600/TR880)
Q1258	8-729-230-63	TRANSISTOR 2SC4116-YG	(TR100)
Q1259	8-729-420-20	TRANSISTOR XN4312	
		< RESISTOR >	
R100	1-216-857-11	METAL CHIP 1M 5% 1/16W	(TR100/TR600/TR880)
R101	1-216-864-11	METAL CHIP 0 5% 1/16W	
R102	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R103	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R104	1-216-815-11	METAL CHIP 330 5% 1/16W	(TR100/TR600/TR880)
R104	1-216-819-11	METAL CHIP 680 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R105	1-216-816-11	METAL CHIP 390 5% 1/16W	(TR100/TR600/TR880)
R105	1-216-819-11	METAL CHIP 680 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R106	1-216-814-11	METAL CHIP 270 5% 1/16W	
R107	1-216-813-11	METAL CHIP 220 5% 1/16W	
R108	1-216-800-11	METAL GLAZE 18 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R108	1-216-801-11	METAL CHIP 22 5% 1/16W	(TR100/TR600/TR880)
R109	1-216-803-11	METAL CHIP 33 5% 1/16W	(TR100/TR600/TR880)
R109	1-216-804-11	METAL CHIP 39 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R110	1-216-818-11	METAL CHIP 560 5% 1/16W	

Ref. No.	Part No.	Description	Remark
R111	1-218-875-11	METAL CHIP 15K 0.50% 1/16W	
R112	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R114	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	(TR100/TR600/TR880)
R114	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R118	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R119	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	(TR100/TR600/TR880)
R119	1-216-864-11	METAL CHIP 0 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R120	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R122	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R123	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R124	1-216-864-11	METAL CHIP 0 5% 1/16W	
R126	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R127	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R128	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R130	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R131	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	(TR100/TR600/TR880)
R132	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R133	1-216-819-11	METAL CHIP 680 5% 1/16W	
R134	1-216-834-11	METAL CHIP 12K 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R135	1-216-833-11	METAL CHIP 10K 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R136	1-216-820-11	METAL CHIP 820 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R137	1-216-821-11	METAL CHIP 1K 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R138	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R139	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R140	1-216-813-11	METAL CHIP 220 5% 1/16W	
R141	1-216-817-11	METAL CHIP 470 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R142	1-216-818-11	METAL CHIP 560 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R143	1-216-808-11	METAL CHIP 82 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R144	1-216-818-11	METAL CHIP 560 5% 1/16W	
R146	1-216-809-11	METAL CHIP 100 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R147	1-216-864-11	METAL CHIP 0 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R148	1-216-813-11	METAL CHIP 220 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R149	1-216-813-11	METAL CHIP 220 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R150	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R151	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	(EXCEPT TR100/TR600/TR880)

Ref. No.	Part No.	Description	Remark
R152	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R153	1-216-837-11	METAL CHIP 22K 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R154	1-216-821-11	METAL CHIP 1K 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R155	1-216-817-11	METAL CHIP 470 5% 1/16W	(TR100/TR600/TR880)
R156	1-216-817-11	METAL CHIP 470 5% 1/16W	(TR100/TR600/TR880)
R157	1-216-817-11	METAL CHIP 470 5% 1/16W	(TR100/TR600/TR880)
R158	1-216-836-11	METAL CHIP 18K 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R159	1-216-836-11	METAL CHIP 18K 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R160	1-216-818-11	METAL CHIP 560 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R161	1-216-821-11	METAL CHIP 1K 5% 1/16W	(TR100/TR600/TR880)
R162	1-216-818-11	METAL CHIP 560 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R163	1-216-821-11	METAL CHIP 1K 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R164	1-216-864-11	METAL CHIP 0 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R165	1-216-821-11	METAL CHIP 1K 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R166	1-216-816-11	METAL CHIP 390 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R167	1-216-821-11	METAL CHIP 1K 5% 1/16W	(TR100/TR600/TR880)
R168	1-216-815-11	METAL CHIP 330 5% 1/16W	(TR100/TR600/TR880)
R169	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR100/TR600/TR880)
R170	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	(TR100/TR600/TR880)
R171	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R173	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	(TR100/TR600/TR880)
R174	1-216-816-11	METAL CHIP 390 5% 1/16W	(TR100/TR600/TR880)
R175	1-216-815-11	METAL CHIP 330 5% 1/16W	(TR100/TR600/TR880)
R175	1-216-821-11	METAL CHIP 1K 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R178	1-216-809-11	METAL CHIP 100 5% 1/16W	
R179	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R180	1-216-809-11	METAL CHIP 100 5% 1/16W	
R181	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R182	1-216-817-11	METAL CHIP 470 5% 1/16W	(TR100/TR600/TR880)
R185	1-216-847-11	METAL CHIP 150K 5% 1/16W	

Ref. No.	Part No.	Description	Remark
R186	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R187	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R188	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R189	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R190	1-216-817-11	METAL CHIP 470 5% 1/16W	(TR100/TR600/TR880)
R191	1-216-815-11	METAL CHIP 330 5% 1/16W	(TR100/TR600/TR880)
R193	1-216-815-11	METAL CHIP 330 5% 1/16W	
R194	1-216-818-11	METAL CHIP 560 5% 1/16W	
R195	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R196	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R201	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R202	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R203	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R206	1-216-817-11	METAL CHIP 470 5% 1/16W	(TR100/TR600/TR880)
R206	1-216-864-11	METAL CHIP 0 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R207	1-216-804-11	METAL CHIP 39 5% 1/16W	
R208	1-216-821-11	METAL CHIP 1K 5% 1/16W	(TR100/TR600/TR880)
R209	1-216-814-11	METAL CHIP 270 5% 1/16W	
R210	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R211	1-216-803-11	METAL CHIP 33 5% 1/16W	
R213	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R214	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R215	1-216-819-11	METAL CHIP 680 5% 1/16W	
R216	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R217	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R218	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R219	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R220	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(TR36/TR83)
R221	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(TR36/TR83)
R222	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(TR36/TR83)
R223	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TR36/TR83)
R224	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R226	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R228	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R229	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R230	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R231	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R232	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R234	1-216-864-11	METAL CHIP 0 5% 1/16W	
R235	1-218-877-11	METAL CHIP 18K 0.50% 1/16W	
R245	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R246	1-216-819-11	METAL CHIP 680 5% 1/16W	

Ref. No.	Part No.	Description	Remark
R247	1-216-815-11	METAL CHIP 330 5% 1/16W	
R253	1-218-849-11	METAL CHIP 1.2K 0.50% 1/16W	
R255	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R256	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R259	1-218-859-11	METAL CHIP 3.3K 0.50% 1/16W	
R261	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R262	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R263	1-218-839-11	METAL GLAZE 470 0.50% 1/16W	
R264	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	(TR100/TR600/TR880)
R265	1-216-818-11	METAL CHIP 560 5% 1/16W	
R266	1-218-837-11	METAL GLAZE 390 0.50% 1/16W	(TR100/TR600/TR880)
R272	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R273	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R274	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R279	1-216-819-11	METAL CHIP 680 5% 1/16W	
R280	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R281	1-216-864-11	METAL CHIP 0 5% 1/16W	(EXCEPT TR36/TR83)
R282	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R283	1-216-864-11	METAL CHIP 0 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R285	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R286	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R288	1-216-844-11	METAL CHIP 82K 5% 1/16W	
R289	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R290	1-216-864-11	METAL CHIP 0 5% 1/16W	
R291	1-216-833-11	METAL CHIP 10K 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R293	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R295	1-216-864-11	METAL CHIP 0 5% 1/16W	
R296	1-216-815-11	METAL CHIP 330 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R297	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R300	1-216-817-11	METAL CHIP 470 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R302	1-216-864-11	METAL CHIP 0 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R303	1-216-810-11	METAL CHIP 120 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R304	1-216-833-11	METAL CHIP 10K 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R305	1-216-820-11	METAL CHIP 820 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R307	1-216-813-11	METAL CHIP 220 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R308	1-216-844-11	METAL CHIP 82K 5% 1/16W	
R309	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R312	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	

Ref. No.	Part No.	Description	Remark
R313	1-216-820-11	METAL CHIP 820 5% 1/16W	
R314	1-216-864-11	METAL CHIP 0 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R315	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R316	1-216-815-11	METAL CHIP 330 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R317	1-216-820-11	METAL CHIP 820 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R318	1-216-820-11	METAL CHIP 820 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R319	1-216-818-11	METAL CHIP 560 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R320	1-216-815-11	METAL CHIP 330 5% 1/16W	
R321	1-216-813-11	METAL CHIP 220 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R322	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R323	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R324	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R325	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R327	1-216-820-11	METAL CHIP 820 5% 1/16W	
R328	1-216-820-11	METAL CHIP 820 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R329	1-216-833-11	METAL CHIP 10K 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R331	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R332	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R334	1-216-815-11	METAL CHIP 330 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R338	1-216-812-11	METAL CHIP 180 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R339	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R342	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R343	1-216-853-11	METAL CHIP 470K 5% 1/16W	(TR100/TR600/TR880)
R346	1-216-857-11	METAL CHIP 1M 5% 1/16W	(TR100/TR600/TR880)
R347	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R348	1-216-839-11	METAL CHIP 33K 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R350	1-216-844-11	METAL CHIP 82K 5% 1/16W	(TR100/TR600/TR880)
R351	1-216-821-11	METAL CHIP 1K 5% 1/16W	(TR100/TR600/TR880)
R354	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R355	1-216-842-11	METAL CHIP 56K 5% 1/16W	(TR100/TR600/TR880)
R356	1-216-839-11	METAL CHIP 33K 5% 1/16W	(TR100/TR600/TR880)
R357	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(EXCEPT TR100/TR600/TR880)

Ref. No.	Part No.	Description	Remark
R358	1-216-821-11	METAL CHIP 1K 5% 1/16W	(TR100/TR600/TR880)
R359	1-216-817-11	METAL CHIP 470 5% 1/16W	(TR100/TR600/TR880)
R360	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	(TR100/TR600/TR880)
R361	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TR100/TR600/TR880)
R362	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TR100/TR600/TR880)
R363	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TR100/TR600/TR880)
R364	1-216-864-11	METAL CHIP 0 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R366	1-216-864-11	METAL CHIP 0 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R368	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R373	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R375	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR100/TR600/TR880)
R377	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR36/TR83)
R378	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR36/TR83)
R380	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR100/TR600/TR880)
R381	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR100/TR600/TR880)
R383	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R387	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R391	1-216-864-11	METAL CHIP 0 5% 1/16W	
R395	1-216-820-11	METAL CHIP 820 5% 1/16W	(TR100/TR600/TR880)
R395	1-216-864-11	METAL CHIP 0 5% 1/16W	(EXCEPT TR100/TR600/TR880)
R398	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R399	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R500	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R501	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R502	1-216-864-11	METAL CHIP 0 5% 1/16W	
R503	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R505	1-216-864-11	METAL CHIP 0 5% 1/16W	
R506	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(EXCEPT TR36/TR83/TR100)
R506	1-216-841-11	METAL CHIP 47K 5% 1/16W	(TR36/TR83/TR100)
R507	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R508	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R509	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R510	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R511	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R512	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R513	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R514	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R515	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R517	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R518	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R519	1-216-817-11	METAL CHIP 470 5% 1/16W	
R520	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R522	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R523	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R525	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R526	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R527	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R528	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R529	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R530	1-216-019-00	METAL CHIP 56 5% 1/10W	
R531	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R532	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R533	1-217-671-11	METAL CHIP 1 5% 1/10W	
R534	1-217-671-11	METAL CHIP 1 5% 1/10W	
R535	1-217-671-11	METAL CHIP 1 5% 1/10W	
R536	1-217-671-11	METAL CHIP 1 5% 1/10W	
R537	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R538	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R539	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R540	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R541	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R542	1-216-864-11	METAL CHIP 0 5% 1/16W	
R543	1-216-864-11	METAL CHIP 0 5% 1/16W	
R544	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R546	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R548	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R549	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R550	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R551	1-216-864-11	METAL CHIP 0 5% 1/16W	
R552	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R553	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R554	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R556	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R558	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R561	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R562	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R563	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R567	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R569	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R570	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R572	1-216-841-11	METAL CHIP 47K 5% 1/16W	

Ref.No.	Part No.	Description	Remark
R573	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R575	1-216-864-11	METAL CHIP 0 5% 1/16W	
R577	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R578	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R580	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R581	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R582	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R584	1-216-864-11	METAL CHIP 0 5% 1/16W	
R585	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R586	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R587	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R588	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R589	1-216-864-11	METAL CHIP 0 5% 1/16W	
R591	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R592	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R595	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R596	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R597	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R954	1-216-138-00	METAL CHIP 3.3 5% 1/8W	
R955	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R956	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R957	1-216-820-11	METAL CHIP 820 5% 1/16W	
R961	1-216-818-11	METAL CHIP 560 5% 1/16W	
R962	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR36/TR83)
R964	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	(TR36/TR83)
R965	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	(TR36/TR83)
R966	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	(TR36/TR83)
R967	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	(TR36/TR83)
R968	1-216-834-11	METAL CHIP 12K 5% 1/16W	(TR36/TR83)
R972	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	(TR36/TR83)
R1251	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(EXCEPT TR36/TR83)
R1252	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR73/TR76/TR93/TR560/TR670)
R1259	1-216-821-11	METAL CHIP 1K 5% 1/16W	(TR100/TR600/TR880)
R1260	1-216-815-11	METAL CHIP 330 5% 1/16W	(TR100/TR600/TR880)
R1265	1-216-804-11	METAL CHIP 39 5% 1/16W	(TR100/TR600/TR880)
R1266	1-216-803-11	METAL CHIP 33 5% 1/16W	(TR100/TR600/TR880)
R1267	1-216-804-11	METAL CHIP 39 5% 1/16W	(TR100/TR600/TR880)
R1268	1-216-803-11	METAL CHIP 33 5% 1/16W	(TR100/TR600/TR880)

Ref.No.	Part No.	Description	Remark
R1270	1-216-864-11	METAL CHIP 0 5% 1/16W	(EXCEPT TR36/TR83)
R1275	1-216-864-11	METAL CHIP 0 5% 1/16W	(EXCEPT TR36/TR83/TR100)
R1279	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR100/TR600/TR880)
R1280	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TR100/TR600/TR880)
R1281	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(TR100)
R1282	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TR100)
R1284	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR100)
R1285	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR73/TR76/TR93/TR560/TR670)
R1286	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TR100/TR600/TR880)
R1287	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TR100/TR600/TR880)
R1400	1-216-864-11	METAL CHIP 0 5% 1/16W	
R1401	1-216-864-11	METAL CHIP 0 5% 1/16W	
R1403	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R1404	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R1405	1-216-819-11	METAL CHIP 680 5% 1/16W	
R1406	1-216-864-11	METAL CHIP 0 5% 1/16W	
R1407	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R1409	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R1410	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R2001	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR100/TR600/TR880)
R2002	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR83/TR93/TR670)
R2003	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR36/TR73/TR76/TR100/TR560)
R2009	1-216-864-11	METAL CHIP 0 5% 1/16W	(EXCEPT TR36/TR83/TR100)

< COMPOSITION CIRCUIT BLOCK >

Ref.No.	Part No.	Description	Remark
RB500	1-236-436-11	NETWORK, RES 100K	
RB501	1-236-432-11	NETWORK, RES 47K	
RB503	1-236-432-11	NETWORK, RES 47K	
RB504	1-236-412-11	NETWORK, RES 1.0K	
RB505	1-236-412-11	NETWORK, RES 1.0K	
RB506	1-236-412-11	NETWORK, RES 1.0K	
RB507	1-236-448-11	NETWORK, RES 1.0M	
RB508	1-236-436-11	NETWORK, RES 100K	
RB509	1-236-444-11	NETWORK, RES 470K	
RB510	1-236-412-11	NETWORK, RES 1.0K	
RB512	1-236-412-11	NETWORK, RES 1.0K	
RB514	1-236-907-11	RESISTOR, NETWORK (CHIP TYPE)	
RB515	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)	
RB516	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)	
RB518	1-236-971-11	NETWORK, RES 0	

Ref. No.	Part No.	Description	Remark
RB519	1-236-971-11	NETWORK, RES 0	
RB520	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)	
RB521	1-236-412-11	NETWORK, RES 1.0K	
RB522	1-236-448-11	NETWORK, RES 1.0M	
RB523	1-236-432-11	NETWORK, RES 47K	
RB524	1-236-908-11	RESISTOR, NETWORK (CHIP TYPE)	
RB525	1-236-424-11	NETWORK, RES 10K	
RB526	1-236-908-11	RESISTOR, NETWORK (CHIP TYPE)	
RB527	1-236-424-11	NETWORK, RES 10K	
RB528	1-236-424-11	NETWORK, RES 10K	
RB529	1-236-424-11	NETWORK, RES 10K	
RB530	1-236-424-11	NETWORK, RES 10K	
RB531	1-236-424-11	NETWORK, RES 10K	
RB532	1-236-424-11	NETWORK, RES 10K	
RB533	1-236-412-11	NETWORK, RES 1.0K	
RB534	1-236-412-11	NETWORK, RES 1.0K	
RB535	1-236-908-11	RESISTOR, NETWORK (CHIP TYPE)	
RB536	1-236-412-11	NETWORK, RES 1.0K	
RB537	1-236-412-11	NETWORK, RES 1.0K	
RB542	1-236-412-11	NETWORK, RES 1.0K	
RB543	1-236-412-11	NETWORK, RES 1.0K	
RB544	1-236-412-11	NETWORK, RES 1.0K	
RB547	1-236-444-11	NETWORK, RES 470K	
RB548	1-236-416-11	NETWORK, RES 2.2K	
RB549	1-236-971-11	NETWORK, RES 0	
RB551	1-236-412-11	NETWORK, RES 1.0K	
RB552	1-236-412-11	NETWORK, RES 1.0K	
RB553	1-236-412-11	NETWORK, RES 1.0K	
RB554	1-236-971-11	NETWORK, RES 0	
RB556	1-236-432-11	NETWORK, RES 47K	
RB557	1-236-412-11	NETWORK, RES 1.0K	

< VIBRATOR >

Ref. No.	Part No.	Description	Remark
X201	1-579-365-21	VIBRATOR, CRYSTAL (3.58MHz)	
X501	1-579-550-11	VIBRATOR, CRYSTAL (32kHz)	
X502	1-760-314-11	VIBRATOR, CRYSTAL (11.895MHz)	
XTL501	1-579-369-21	VIBRATOR (10MHz)	

****

1-651-920-11 MOUNTED PCB, ZB-2 BOARD

****

(Ref. No. 4,000 Series)

< BUZZER >

Ref. No.	Part No.	Description	Remark
BU101	1-529-107-11	BUZZER, PIEZOELECTRIC	

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C102	1-164-346-11	CERAMIC CHIP 1uF 16V	
C103	1-164-346-11	CERAMIC CHIP 1uF 16V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN101	1-691-483-21	CONNECTOR, FFC/FPC 4P	

< BATTERY HOLDER >

Ref. No.	Part No.	Description	Remark
LI101	1-550-104-11	HOLDER, BATTERY	

****

MISCELLANEOUS

****

Ref. No.	Part No.	Description	Remark
6	1-769-662-11	CABLE, FLEXIBLE FLAT 11P	
110	1-473-173-11	SWITCH BLOCK, CONTROL (CK) (TR83/TR93/TR670)	
110	1-473-173-21	SWITCH BLOCK, CONTROL (CK)(TR600/TR880)	
110	1-473-173-31	SWITCH BLOCK, CONTROL (CK)(TR100)	
110	1-473-173-41	SWITCH BLOCK, CONTROL (CK) (TR36/TR73/TR76/TR560)	
111	1-810-535-12	DISPLAY PANEL, LIQUID CRYSTAL	
156	1-651-894-11	FP-86 FLEXIBLE BOARD (TR36/TR83/TR100)	
207	1-656-481-11	FP-292 FLEXIBLE BOARD (TR73/TR76/TR93/TR560/TR600/TR670/TR880)	
208	1-656-480-11	FP-291 FLEXIBLE BOARD (TR73/TR76/TR93/TR560/TR600/TR670/TR880)	
212	8-753-015-00	LCX005AK-4 (TR73/TR76/TR93/TR560/TR600/TR670/TR880)	
251	1-473-132-11	SWITCH BLOCK, CONTROL (FK) (TR36/TR73/TR76/TR83/TR93/TR560/TR670)	
251	1-473-132-31	SWITCH BLOCK, CONTROL (FK) (TR100/TR600/TR880)	
258	1-691-471-11	CONNECTOR, TRANSLATION 11P	
260	1-651-891-11	FP-52 FLEXIBLE BOARD (TR36/TR73/TR76/TR83/TR93/TR560/TR670)	
260	1-651-892-11	FP-53 FLEXIBLE BOARD (TR100/TR600/TR880)	
301	1-657-049-11	FP-44 FLEXIBLE BOARD	
308	1-547-716-11	LENS, ZOOM (VCL-5412WA)(TYPE II)	
308	1-547-739-11	LENS, ZOOM (VCL-5412WB)(TYPE III)	
308	8-848-704-01	DEVICE, LENS LSV-140A (TYPE I)	
310	1-547-558-21	FILTER BLOCK, OPTICAL (TR36/TR73/TR76/TR560)	
310	1-547-735-51	FILTER BLOCK, OPTICAL (TR83/TR93/TR100/TR600/TR670/TR880)	
314	1-500-227-21	BEAD, FERRITE	
315	1-651-890-11	FP-49 FLEXIBLE BOARD (TR83/TR93/TR600/TR670/TR880)	
801	A-7049-501-A	DRUM ASSY, UPPER (DGR-78-R) (TR36/TR73/TR76/TR83/TR93/TR560/TR670)	
801	A-7049-651-A	DRUM ASSY, UPPER (DGR-0B5-R) (TR100/TR600/TR880)	
807	1-568-323-11	CONNECTOR, BOARD TO BOARD 4P	
871	1-641-643-12	FP-444 FLEXIBLE BOARD	
872	1-691-254-13	CONNECTOR, TRANSLATION 10P	
874	1-641-639-13	FP-442 FLEXIBLE BOARD	

Ref. No.	Part No.	Description	Remark
875	1-645-271-11	FP-575 FLEXIBLE BOARD	
BL801	1-517-325-11	LAMP, FLUORESCENT (0.55 INCH) (TR73/TR76/TR93/TR560/TR600/TR670/TR880)	
IC691	A-7030-368-A	CCD BLOCK ASSY (054 SERVICE) (CCD IMAGER)(TR36/TR73/TR76/TR560)	
IC691	A-7030-370-A	CCD BLOCK ASSY (058 SERVICE) (CCD IMAGER)(TR100)	
IC691	A-7030-373-A	CCD BLOCK ASSY (059V SERVICE) (CCD IMAGER)(TR83/TR93/TR600/TR670/TR880)	
J201	1-537-373-51	JACK BOARD ASSY (TR100/TR600/TR880)	
J201	1-537-415-11	TERMINAL BOARD (TR36/TR73/TR76/TR83/TR93/TR560/TR670)	
M001	1-542-259-11	MICROPHONE, CAP (L-CH)	
M002	1-542-259-11	MICROPHONE, CAP (R-CH)	
M901	A-7048-564-A	DRUM ASSY (DGH-78A-R) (TR36/TR73/TR76/TR83/TR93/TR560/TR670)	
M901	A-7048-776-A	DRUM ASSY (DGH-0B5A-R) (TR100/TR600/TR880)	
M902	8-835-477-12	MOTOR, DC SCE-0101A (CAPSTAN)	
M903	A-7040-304-A	MOTOR BLOCK ASSY (Z), LM (LOADING)	
M905	1-698-364-01	MOTOR ASSY, FOCUS (TYPE I)	
M906	1-698-363-01	MOTOR ASSY, ZOOM (TYPE I)	
M907	3-708-888-01	METER, IG (IRIS)(TYPE II)	
M908	3-708-889-01	MOTOR ASSY, FOCUS (TYPE II)	
M909	3-708-887-01	MOTOR ASSY, ZOOM (TYPE II)	
M910	3-708-898-01	IRIS ASSY (TYPE III)	
M911	3-708-897-01	MOTOR ASSY, FOCUS (TYPE III)	
M912	3-708-896-01	MOTOR ASSY, ZOOM (TYPE III)	
S001	1-572-986-11	SWTICH, ROTARY (ENCODER)	
S002	1-572-987-11	SWTICH, PUSH (3 KEY) (RED PROOF, ME/MP, MP/MP-HG)	
S005	1-570-771-21	SWITCH (C DOWN)	
SE691	1-810-725-31	SENSOR, ANGULAR VELOCITY (PITCH) (TR83/TR93/TR600/TR670/TR880)	
SE692	1-810-725-41	SENSOR, ANGULAR VELOCITY (YAW) (TR83/TR93/TR600/TR670/TR880)	
⚠V901	1-452-673-31	CRT ASSY (M01KXX90WB)(TR36/TR83/TR100)	
W500	1-651-889-11	FP-48 FLEXIBLE BOARD	
W501	1-642-186-11	FP-437 FLEXIBLE BOARD	
⚠W901	1-540-019-21	SOCKET ASSY, CRT (TR36/TR83/TR100)	

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ACCESSORIES & PACKING MATERIALS

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Ref. No.	Part No.	Description	Remark
	1-467-574-71	REMOTE COMMANDER (RMT-708)	
	1-569-008-11	ADAPTOR, CONVERSION 2P	
	1-575-334-11	CORD, CONNECTION (A/V connecting cable (STEREO), 1.5m)	
	1-575-335-21	CORD, CONNECTION (S VIDEO connecting cable, 1.5m)(TR100/TR600/TR880)	
*	3-704-295-01	BAG (STANDARD), PROTECTION (TR670PK)	
	3-798-581-21	OPERATION MANUAL (ENGLISH) (TR36/TR73/TR76/TR83/TR93)	
	3-798-581-31	OPERATION MANUAL (FRENCH) (TR76:CND/TR93:CND)	
	3-798-654-11	MANUAL, INSTRUCTION (ENGLISH, SPANISH) (TR560/TR670/TR670PK)	
	3-798-654-41	MANUAL, INSTRUCTION (CHINESE) (TR560/TR670/TR670PK)	
	3-798-655-21	MANUAL, INSTRUCTION (ENGLISH) (TR100/TR600)	
	3-798-655-31	MANUAL, INSTRUCTION (FRENCH)(TR600:CND)	
	3-798-887-11	MANUAL, INSTRUCTION (ENGLISH, SPANISH) (TR880)	
	3-798-887-41	MANUAL, INSTRUCTION (CHINESE) (TR880:E, HK)	
	3-800-185-11	MANUAL, INSTRUCTION (HUNGUL)(TR880:JE)	
	3-800-195-11	INSTRUCTION (TR670PK)	
	3-947-969-21	BELT (S), SHOULDER	
*	3-961-062-01	CUSHION (LOWER)(EXCEPT TR670PK)	
*	3-961-693-01	CUSHION, ACC (EXCEPT TR670PK)	
*	3-963-162-31	INDIVIDUAL CARTON (TR670PK)	
*	3-963-210-01	INDIVIDUAL CARTON (TR83)	
*	3-963-210-11	INDIVIDUAL CARTON (TR36)	
*	3-963-210-21	INDIVIDUAL CARTON (TR100)	
*	3-963-210-61	INDIVIDUAL CARTON (TR93)	
*	3-963-210-71	INDIVIDUAL CARTON (TR76)	
*	3-963-210-81	INDIVIDUAL CARTON (TR560)	
*	3-963-210-91	INDIVIDUAL CARTON (TR73)	
	3-963-605-01	COVER, INTERCEPTOR, LIGHT (TR73/TR76/TR93/TR560/TR600/TR670/TR670PK/TR880)	
*	3-963-668-21	INDIVIDUAL CARTON (TR600)	
*	3-963-668-31	INDIVIDUAL CARTON (TR670)	
*	3-963-668-41	INDIVIDUAL CARTON (TR880)	
	3-963-674-01	CASE, CARRING (TR670PK)	
	3-964-041-01	ADAPTOR, TRIPOD	
*	3-965-128-01	PAT (TR670PK)	
	A-6768-253-B	RFU ADAPTOR (RFU-90UC) (TR560:E/TR670:E/TR670PK)	
	A-7003-317-A	RFU ADAPTOR (RFU-95UC) (TR560:E/TR670:E/TR670PK)	

** AC-V25A/V25B/V25C AC POWER ADAPTOR

*** NP-55 BATTERY PACK

Note.

** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.

*** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

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****

HARDWARE LIST

****

Ref. No.	Part No.	Description	Remark
#1	7-627-553-47	PRECISION SCREW +P 2X4 TYPE 3	

Be sure to read "Note on the CCD Imager replacement" on page 4-6 when changing the CCD imager.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

SECTION 6
ADJUSTMENTS

6-1. CAMERA SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 6–24.

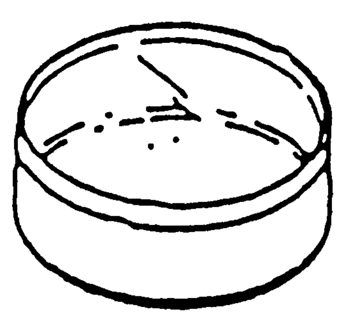
1-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

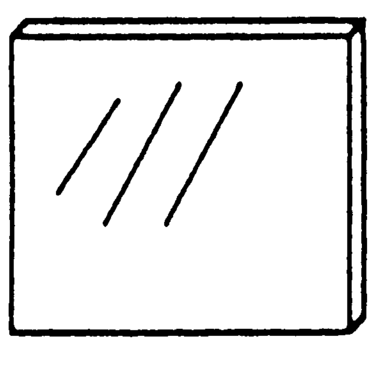
1-1-1. List of Service Tools

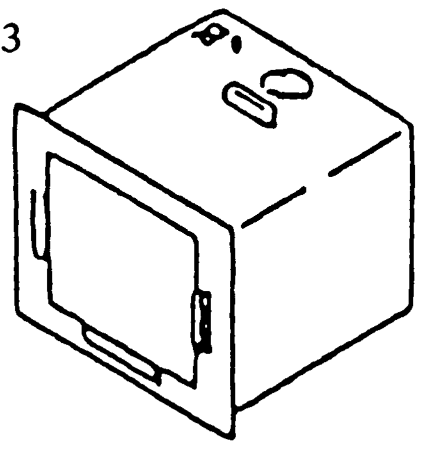
- Oscilloscope
- Adjusting driver
- Regulated power supply
- Color monitor
- Vectorscope
- Digital voltmeter

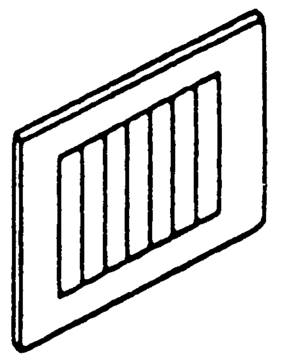
Ref. No.	Name	Parts Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	White balance check
	ND filter 0.3	J-6080-818-A	White balance check
J-3	Pattern box PTB-450	J-6082-200-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjusting remote commander (RM-95-remodeled partly)[Note 1]	J-6082-053-B	
J-6	Siemens star	J-6080-875-A	For checking the flange back
J-7	Extension cable (42P, 0.8 mm)	J-6082-285-A	For extension between the VC board (CN601) and VS board (CN203)
	Extension cable (34P, 0.8 mm)	J-6082-286-A	For extension between the AU board CN1302 and VS board (CN202)
J-8	Extension cable (9P, 0.8 mm)	J-6082-288-A	For extension between the control switch block (FK) and VS board (CN502)
	Extension cable (18P, 0.8 mm)	J-6082-289-A	For extension between the control switch block (CK) and VS board (CN503)
J-9	Measuring pin tool for COLOR EVF	J-6082-192-A	For adjusting the COLOR EVF

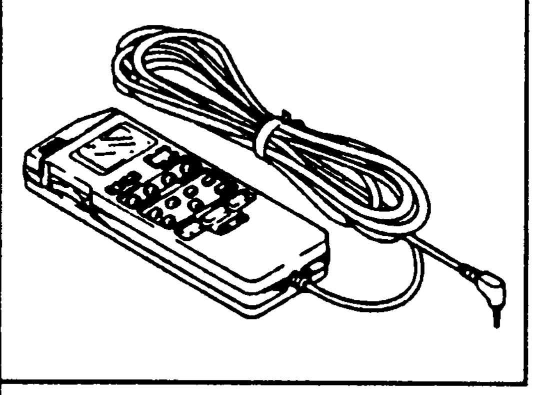
Note 1: If the micro processor IC in the adjusting remote commander is not the new micro processor (UPD7503G-C56-12), the pages cannot be switched. In this case, replace with the new micro processor (8-759-148-35).

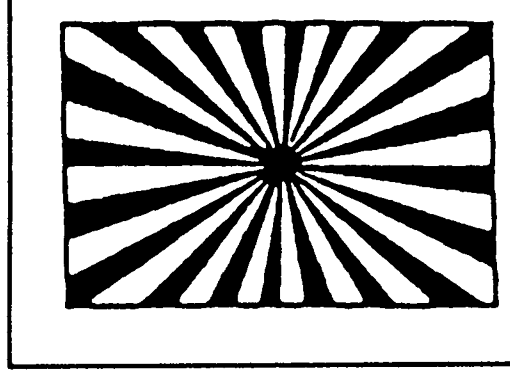
J-1


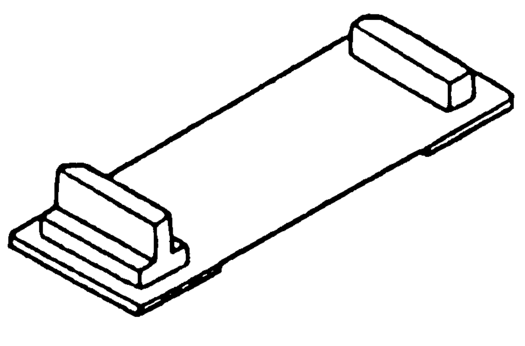
J-2


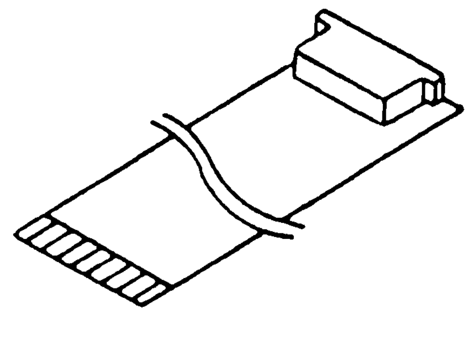
J-3


J-4


J-5


J-6


J-7


J-8


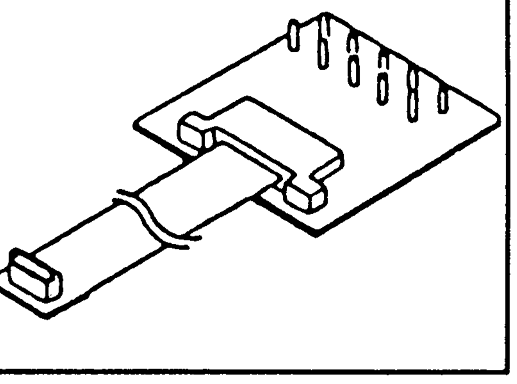
J-9


Fig. 6-1-1.

1-1-2. Preparations

Note 1: For further details of how to remove the cabinet and each board, refer to "2. Disassembly".

Note 2: When adjusting only, the lens block and VC board need not be taken apart.

1) Connect the equipments for adjusting as shown in Fig. 6-1-3.
2) The F panel block (MA board) is not required in adjustments. Remove the following connector.
   1. CN1301 of the AU board
3) If remove the cabinet (R) (Power switch, camera function switch and electronic view-finder), set to the camera power supply ON mode (Note 1), and disconnect the following connectors.
   1. CN503 of VS board
   2. CN206 of VS board
   3. CN101 of ZB board

   Be sure to exit this mode after completing the adjustment. (Note 2)
4) Turning OFF the Auto Focus Using the Adjusting Remote Commander
   1. Set data: 01 to page: 6, address: 25.
      (The auto focus will turn OFF. The focus can be adjusted using the focus button on the adjusting remote commander. But the HOLD switch must be set to OFF.)
   2. After completing the adjustment/operation check, set data: 00 to page: 6, address: 25.
5) Turning OFF the STEADY SHOT Function Using the Adjusting Remote Commander (CCD-TR83/TR93/TR600/TR670/TR880)
   1. Set data: 02 to page: 6, address: 32.
   2. Set data: 01 to page: 6, address: 33.
      (The STEADY SHOT will go OFF.)
   3. After completing the adjustment/operation check, return the data of address: 32 and address: 33 of page: 6 to 00.

Note 1: Setting the Forced Camera Power Supply ON Mode
1) Set data: 01 to page: 1, address: 00.
2) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.

By carrying out the above, the camera can be operated even if the cabinet (R) has been removed. Be sure to exit the forced camera power ON mode after completing the adjustment.

Note 2: Exiting the Forced Camera Power Supply ON Mode
1) Set data: 01 to page: 1, address: 00.
2) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 1, address: 00.

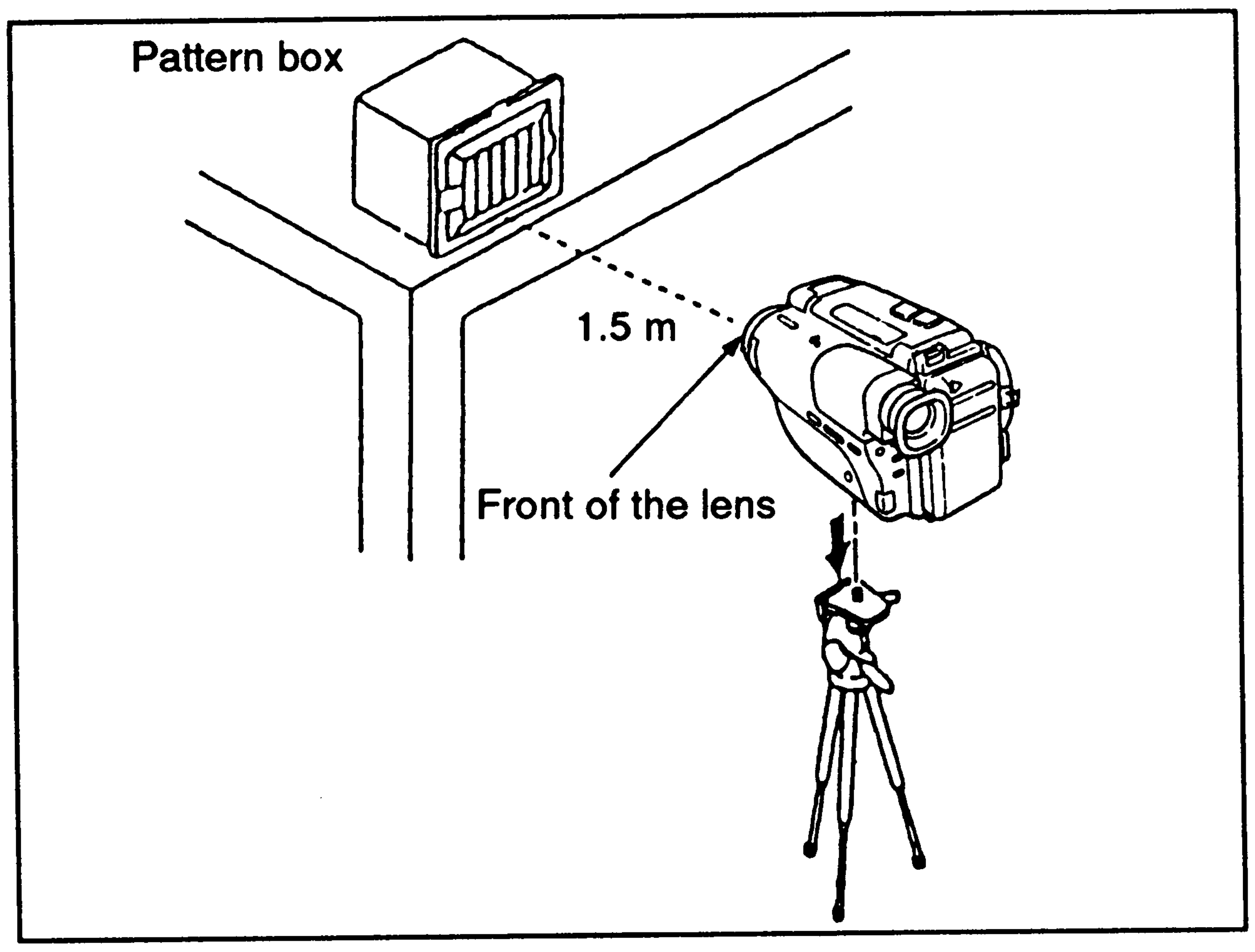
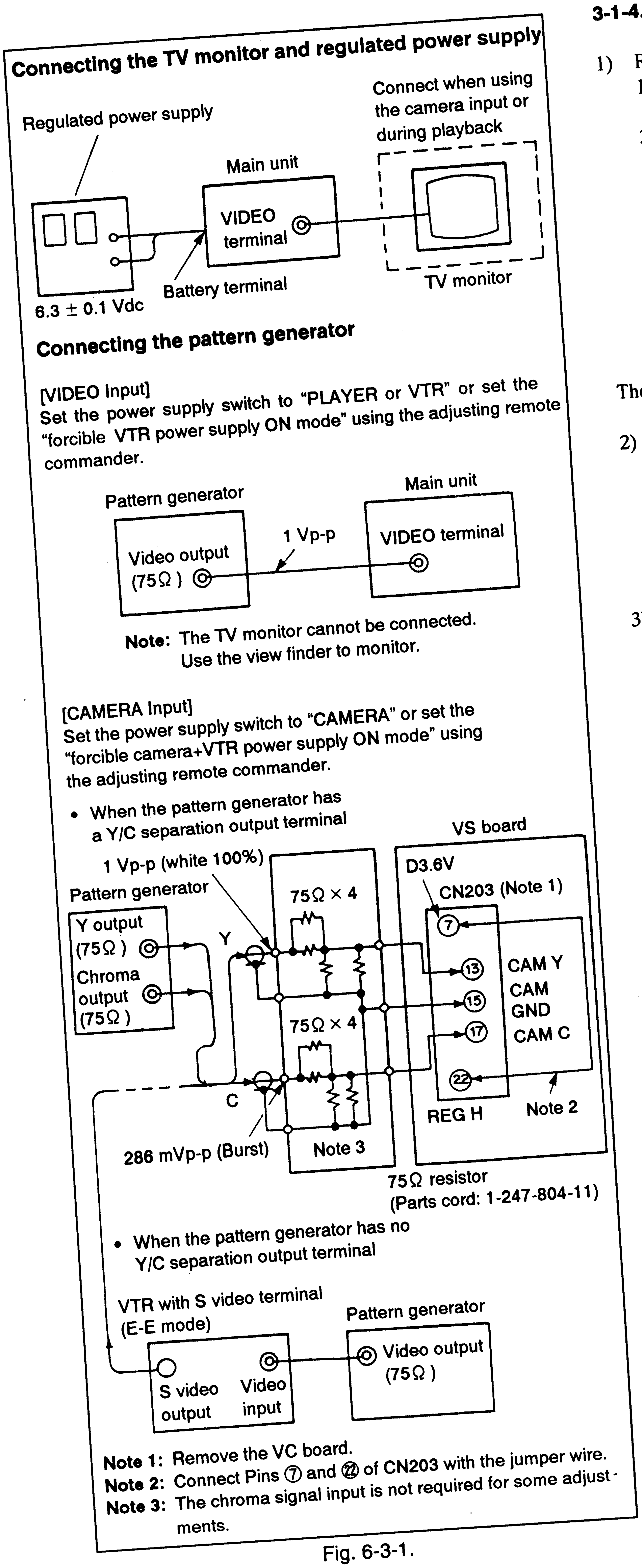


Fig. 6-1-2.


Connecting the TV monitor and regulated power supply

Connecting the pattern generator

[VIDEO Input]
Set the power supply switch to "PLAYER or VTR" or set the "forcible VTR power supply ON mode" using the adjusting remote commander.

Note: The TV monitor cannot be connected.
Use the view finder to monitor.

[CAMERA Input]
Set the power supply switch to "CAMERA" or set the "forcible camera+VTR power supply ON mode" using the adjusting remote commander.

- When the pattern generator has a Y/C separation output terminal

- When the pattern generator has no Y/C separation output terminal

Note 1: Remove the VC board.
Note 2: Connect Pins ⑦ and ㉒ of CN203 with the jumper wire.
Note 3: The chroma signal input is not required for some adjustments.

Fig. 6-3-1.

3-1-4. How to Set the REC Mode in the Model without REC switch

1) REC key forbidden accept mode cancel
    1. Connect the adjusting remote commander to the remote terminal.
    2. Turn on the power.
    3. Turn on the HOLD switch of the adjusting remote commander.
    4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
    5. Select the page: D address: 17, and set the data to 12 [13].$^{\text{Note 1}}$
    6. Press PAUSE button on the adjusting remote commander. (Write to the non-volatile memory)

The REC key is accepted through the above procedure.

2) REC mode setting
    1. Turn off the HOLD switch of the adjusting remote command-er.
    2. Press REC buttons of the adjusting remote commander.
    3. Perform "3. Procedure after completed the adjustment", after completing adjustment.

3) Procedure after completed the adjustment
Be sure to return the mode to REC key forbidden accept mode after adjustment.
    1. Connect the adjusting remoter controller.
    2. Turn on the power.
    3. Turn on HOLD switch of the adjusting remote commander.
    4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
    5. Select the page: D address: 17, and set the data to 02 [03].$^{\text{Note 1}}$
    6. Press PAUSE button on the adjusting remote commander. (Write to the non-volatile memory)
    7. Turn off the power.

Note 1: No mark : CCD-TR36/TR73/TR76/TR83/TR93
[ ] : CCD-TR560/TR670

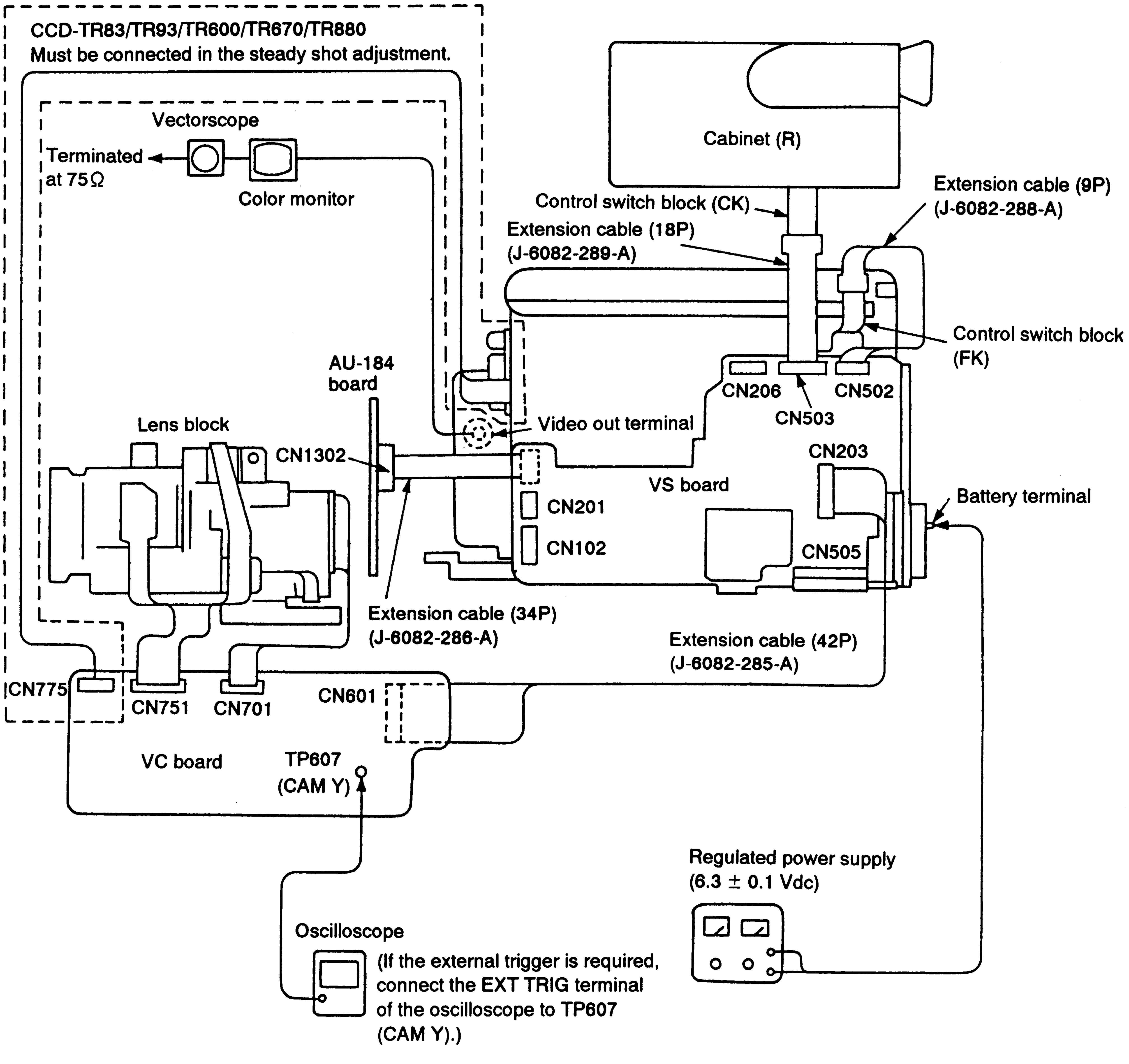

CCD-TR83/TR93/TR600/TR670/TR880
Must be connected in the steady shot adjustment.
Vectorscope
Terminated at 75Ω
Color monitor
Cabinet (R)
Control switch block (CK)
Extension cable (18P)
(J-6082-289-A)
Extension cable (9P)
(J-6082-288-A)
Control switch block
(FK)
AU-184
board
Lens block
CN1302
Video out terminal
CN206
CN503
CN502
CN203
VS board
CN201
CN102
Battery terminal
CN505
Extension cable (34P)
(J-6082-286-A)
Extension cable (42P)
(J-6082-285-A)
CN775
CN751
CN701
CN601
VC board
TP607
(CAM Y)
Regulated power supply
(6.3 ± 0.1 Vdc)
Oscilloscope
(If the external trigger is required,
connect the EXT TRIG terminal
of the oscilloscope to TP607
(CAM Y).)

Fig. 6-1-3.

1-1-3. Precautions

1. Switch settings

Adjust the switches to the following positions, and adjust without loading the cassette tape, unless specified otherwise.

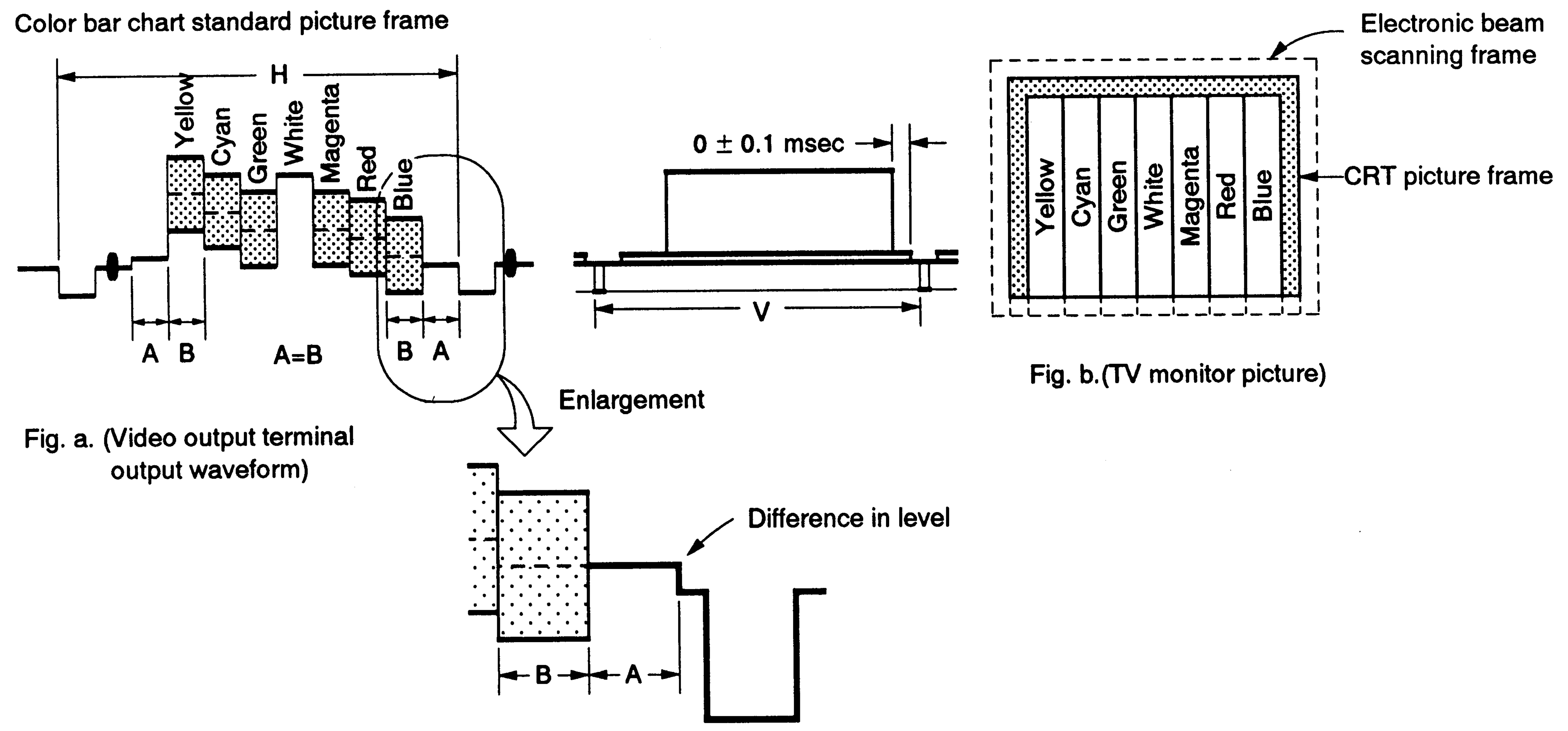
1. Camera/player (VTR) power switch
   (Control switch block (Control switch block (CK))···Camera
2. Standby switch (Control switch block (FK)) ·········· Standby
3. PROGRAM AE button (Control switch block (CK))······Off
4. FOCUS switch (Control switch block (CK)) ···········Manual
5. BACK LIGHT or EXPOSURE button
   (Control switch block (CK))·································Off
6. STEADY SHOT button (CCD-TR83/TR93/TR600/TR670/TR880) (Control switch block (CK)) ························Off

2. Adjusting Procedure

Adjust in the given order.

3. Subject

1) Color bar chart (Standard picture frame)
   Adjust the picture frame as shown in Fig. 6-1-4. if adjustments are performed using the color bar chart. (Standard picture frame)
2) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box, and so that the white pattern will be displayed.
   Don't touch the zoom switch.



Color bar chart standard picture frame
H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A
Fig. a. (Video output terminal output waveform)
0 ± 0.1 msec
V
Enlargement
Difference in level
B
A
Electronic beam scanning frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue
Fig. b.(TV monitor picture)

Adjust the camera zoom and direction to obtain the output waveform shown in Fig. a and the TV monitor display shown in Fig. b.

Fig. 6-1-4.

3) Chart for flange back adjustment
   Combine a white A0 size (1189 mm× 841 mm) paper to a black one, and make the chart shown in Fig. 6-1-5.

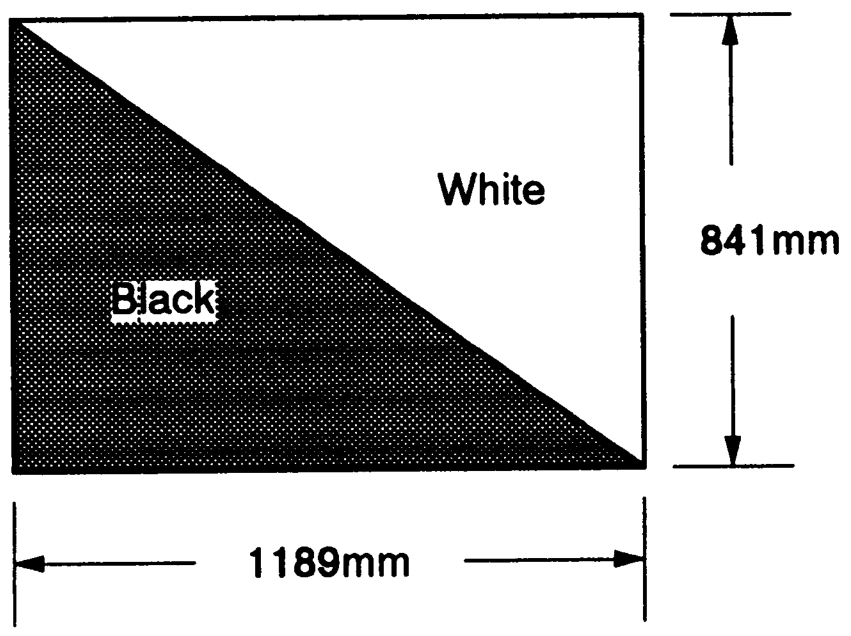


Fig. 6-1-5.

Note: Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

1-1-4. Adjusting Remote Commander

Use the adjusting remote commander to change the coefficient of the digital signal processing or the EVR data.

The adjusting remote commander uses the remote commander signal line (LANC) to perform the bidirectional communication with the camera microprocessor. The effect data of the bidirectional communication must be written in the nonvolatile memory.

1. Using the adjusting remote commander

1) Connect the adjusting remote commander to the remote terminal.
2) Adjust the HOLD switch of the adjusting remote commander to "HOLD" (SERVICE position).

If it has been properly connected, the LCD on the adjusting remote commander will display as shown in Fig. 6-1-6.

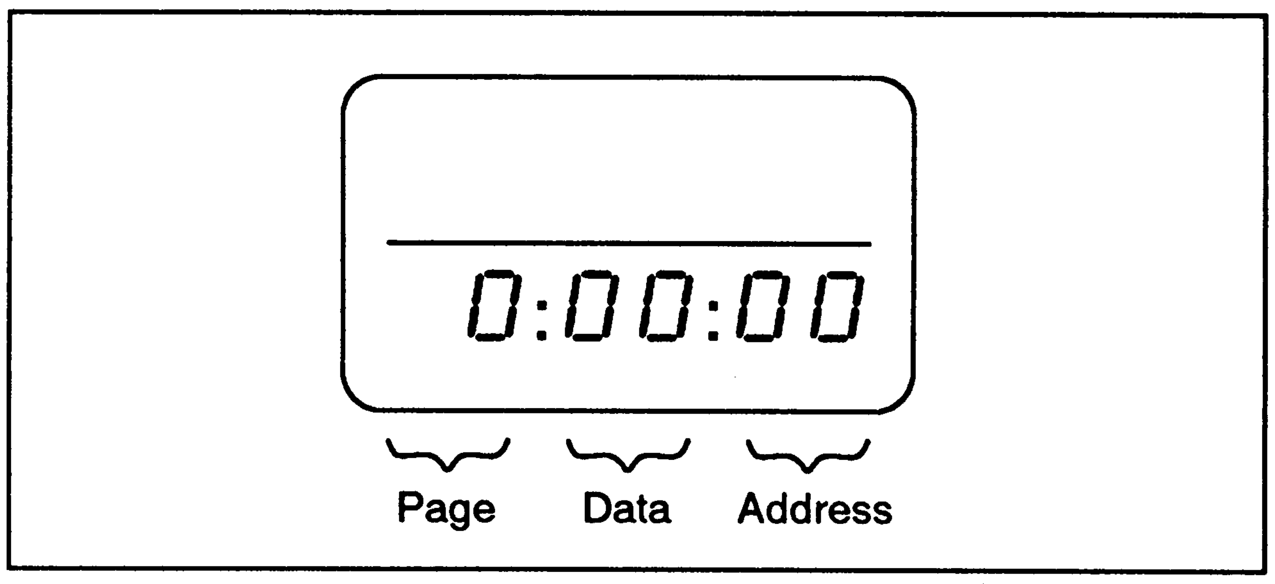


Fig. 6-1-6.

3) Operate the adjusting remote commander as follows.
   - Changing the page
     The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LCD Display	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 6-1-1.

   - Changing the address
     The address increases when the FF (▶▶) button is pressed, and decreases when the REW (◀◀) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the PLAY (▶) button is pressed, and decreases when the STOP (■) button is pressed.
     There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The PAUSE button must be pressed to write the adjustment data (F page) in the nonvolatile memory.
     (The new adjustment data will not be recorded in the nonvolatile memory if this step is not performed.)
4) Select page: 6, address: 00, and adjust the data to 01. Page F, and enables the camera section (Addresses 01 to BF of page F) to be adjusted.
5) After completing all adjustments, turn off the main power supply (6.3V) once.

2. Precautions upon using the adjusting remote commander

Mishandling of the adjusting remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

1-1-5. Page F Address List

Note 1: The data already listed in the adjustment data memo column are fixed values.

Note 2: The adjustment data initial values are values just after executing "Page F Data Initialization" and "Page F Data Modification". They are different from the values after executing all adjustments.

Note 3: In some cases, data have been input to the page F addresses C0 to FF. This has no relation to the adjustments.

Note 4: No mark : CCD-TR83/TR93/TR100/TR600/TR670/TR880
( ) : CCD-TR36/TR73/TR76/TR560
*1 : 80 (CCD-TR600/TR880)
82 (CCD-TR100)
84 (CCD-TR83/TR93/TR670)
86 (CCD-TR73/TR76/TR560)
88 (CCD-TR36)
*2 : 00 (CCD-TR100)
02 (CCD-TR36/TR73/TR76/TR560)
20 (CCD-TR83/TR93/TR600/TR670/TR880)
*3 : 40 (Others)
47 (CCD-TR83/TR93/TR600/TR670/TR880)
*4 : 23 (CCD-TR83/TR93/TR600/TR670/TR880)
A3 (Others)
*5 : 10 (CCD-TR36/TR73/TR76/TR560)
28 (CCD-TR100)
34 (CCD-TR83/TR93/TR600/TR670/TR880)
*6 : 25 (CCD-TR83/TR93/TR670)
26 (CCD-TR100/TR600/TR880)
28 (CCD-TR36/TR73/TR76/TR560)
*7 : 43 (CCD-TR83/TR93/TR670)
44 (CCD-TR100/TR600/TR880)
54 (CCD-TR36/TR73/TR76/TR560)
*8 : 02 (Others)
12 (CCD-TR83/TR93/TR600/TR670/TR880)
*9 : D8 (CCD-TR83/TR93/TR670)
E0 (CCD-TR600/TR880)
E8 (CCD-TR100)
F8 (CCD-TR36/TR73/TR76/TR560)
*10 : 75 (CCD-TR100)
B5 (CCD-TR83/TR93/TR600/TR670/TR880)
A5 (CCD-TR36/TR73/TR76/TR560)

Address	Adjustment data	
	Initial value	Memo column
00	*1	*1
01	*2	*2
02	00	00
03	*3	*3
04	80	
05	80	
06	80	
07	80	
08	2D	
09	26	
0A	FA	
0B	F1	
0C	30	
0D	00	
0E	58	
0F	00	
10	E0	E0
11	8F	
12	6C	
13	36	
14	3C	
15	B6	
16	0D	
17	A3	
18	12	
19	8E	
1A	10	
1B	E2	
1C	0C	0C
1D	00	00
1E	80	
1F	80	
20	79	79
21	79	79
22	00	00
23	59	53
24	43	43
25	*10	*10
26	45	45
27	3F	3F
28	*4	*4
29	0B	0B

Table 6-1-2 (1).

Address	Adjustment data	
	Initial value	Memo column
2A	*5	*5
2B	58	58
2C	FF	FF
2D	26	26
2E	16 (17)	16 (17)
2F	*6	*6
30	00	00
31	00	00
32	*7	*7
33	68	68
34	02	
35	35	35
36	02	02
37	00	00
38	83	83
39	6A	6A
3A	50	50
3B	20	20
3C	C0	C0
3D	00	00
3E	00	
3F	00	
40	00	
41	00	
42	00	
43	00	
44	00	
45	00	
46	00	
47	00	
48	00	
49	00	
4A	00	
4B	00	
4C	00	
4D	00	
4E	00	00
4F	20	20
50	*8	*8
51	02	02
52	66	66
53	18	18

Table 6-1-2 (2).

Address	Adjustment data	
	Initial value	Memo column
54	6B (66)	6B (66)
55	9F	9F
56	66	66
57	6C (66)	6C (66)
58	5C (59)	5C (59)
59	83	83
5A	67	67
5B	5C	5C
5C	5C	5C
5D	4A	4A
5E	20 (1E)	20 (1E)
5F	5C	5C
60	3C (3A)	3C (3A)
61	33	33
62	0C	0C
63	26	26
64	24	24
65	02	02
66	04	04
67	05	05
68	00	00
69	00	00
6A	04	04
6B	00	00
6C	04	04
6D	00	00
6E	02	02
6F	33	33
70	B0	B0
71	18	18
72	0F	0F
73	0F	0F
74	00	00
75	63	63
76	1B	1B
77	*9	*9
78	A0	A0
79	30	30
7A	10	10
7B	50	50
7C	58	58
7D	88	88

Table 6-1-2 (3).

Address	Adjustment data	
	Initial value	Memo column
7E	66	66
7F	46	46
80	8F	8F
81	00	00
82	20	20
83	18	18
84	02	02
85	08	08
86	40	40
87	20	20
88	40	40
89	30	30
8A	50	50
8B	60	60
8C	80	80
8D	1D	1D
8E	50	50
8F	00	00
90	00	00
91	77	77
92	00	00
93	FB	FB
94	04	04
95	32	32
96	6B	6B
97	8D	8D
98	A1	A1
99	30	30
9A	30	30
9B	21	21
9C	91	91
9D	00	00
9E	00	00
9F	00	00
A0	00	00
A1	00	00
A2	00	00
A3	02	02
A4	80	80
A5	00	00
A6	80	80
A7	00	00

Table 6-1-2 (4).

Address	Adjustment data	
	Initial value	Memo column
A8	00	00
A9	80	80
AA	00	00
AB	80	80
AC	00	00
AD	00	00
AE	02	02
AF	44	44
B0	3D	3D
B1	25	25
B2	3D	3D
B3	25	25
B4	12	12
B5	4B	4B
B6	40 (00)	40 (00)
B7	20	20
B8	00	00
B9	05	05
BA	00	00
BB	20	20
BC	80	80
BD	00	00
BE	*8	*8
BF	*9	*9
C0 to EF		
F0		
F1		
F2		
F3		
F4		
F5		
F6		
F7		
F8		
F9		
FA		
FB		
FC		
FD		
FE		
FF		

Table 6-1-2 (5).

*8 : 6B (CCD-TR83/TR93/TR600/TR670/TR880)
69 (CCD-TR100)
6E (CCD-TR36/TR73/TR76/TR560)
*9 : 2F (CCD-TR83/TR93/TR600/TR670/TR880)
2E (CCD-TR100)
32 (CCD-TR36/TR73/TR76/TR560)

1-1-6. Data Processing

The calculation of the DDS display and the adjusting remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 6-1-3. indicates the hexadecimal notation-the decimal notation calculation table.

Hexadecimal notation-Decimal notation

②

The lower digits of the hexadecimal notation The upper digits of the hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	80	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① B (b)	176	177	178	179	180	180	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: ( ) indicate the adjusting remote control unit display.

(Example) In the case that the DDS display and the adjusting remote control unit display are BD (b d).
As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection "189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 6-1-3.

1-2. CAMERA SYSTEM ADJUSTMENT

1. Power Supply Voltage Check (DD board)

Subject	Option
Measuring instrument	Digital voltmeter
D5V check	
Measurement point	Pin ㉙ of CN901
Specified value	4.9 ± 0.1 Vdc
D3.6V check	
Measurement point	Pins ㉑ and ㉒ of CN901
Specified value	3.6 ± 0.1 Vdc
CAM 5V check	
Measurement point	Pins ㉕ and ㉖ of CN901
Specified value	4.85 ± 0.1 Vdc
CAM 15V check	
Measurement point	Pin ㉗ of CN901
Specified value	15 ± 0.3 Vdc
CAM -9V check	
Measurement point	Pin ㉛ of CN901
Specified value	$-8.5^{+0.25}_{-0.4}$ Vdc

Checking method:

1) Check that each power supply voltage satisfies the specified value.

2. Page F Data Initialization

Note: It is necessary to perform all adjustments of the camera section from the beginning again if the data of page F has been initialized.

Initializing method:

1) Page: 6, address: 00, data: 01
2) Check that the data of page: 6, address: 11 is 00.
3) Set data: 2D to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
4) Check that the data of page: 6, address: 11 is 01.
5) Set data: 00 to page: 6, address: 01. and press the PAUSE button of the adjusting remote commander.
6) After performing "Page F data modification", perform all the adjustments of the camera section (page F).

3. Page F Data Modification 1

The data (initial data) that is automatically written on page F after the initialization of the page F data will differ according to some camera micro processor versions. Change the data by manual input, and arrange it.

CCD-TR36/TR73/TR76/TR560

Address	Data
01	02
03	40
25	A5
28	A3
2A	10
2D	26
2E	17
2F	28
32	54
50	02
54	66
57	66
58	59
5E	1E
60	3A
77	F8
8D	23
8E	60
B6	00
BE	6E
BF	32

CCD-TR83/TR93/TR670

Address	Data
2A	34
2D	26
2F	25
32	43
77	D8
BE	6B
BF	2F

[Distinguishing the Camera Micro Processor (VC Board IC602) Versions]

Each version can be distinguished by looking at the part name of the camera micro processor or the data of page: 6, address: 10.

Version	Part Name	Page: 6 Address: 10
Ver.2.0	SC424611	20

[Distinguishing the Steady Shot Control Micro Processor (VC Board IC778) Versions] (CCD-TR83/TR93/TR600/TR670/TR880)

Each version can be distinguished by looking at the part name of the steady shot control micro processor or the data of page: 6, address: 30.

Version	Part Name	Page: 6 Address: 30
Ver.1.0	CXP81120-003R	10

Note 1: When changing the data, to write the data to the non-volatile memory, press the PAUSE button of the adjusting remote commander every time the new data is set.

Note 2: When changing address: 00, set the data of page: 6, address: 00 to 80.

CCD-TR100

Address	Data
01	00
03	40
28	A3
2A	28
2D	26
2F	26
32	46
50	02
77	E8
8D	23
8E	60
B6	00
BE	69
BF	2E

CCD-TR600/TR880

Address	Data
2A	34
2D	26
2F	26
32	44
77	E0
BE	6B
BF	2F

4. Page F Data Modification 2 (CCD-TR100)

Change the data of page: F, address: 2B according to the type of IC used for the camera core (IC609).

Changing Method:

1) Page: 6, address: 00, data: 01
2) Set data: 16 to page: 6, address: 02.
3) Select page: A.
4) Read the data displayed on the adjusting remote commander (4 digits) and take the second number as X.

- CCD-TR83/TR93/TR100/TR600/TR670/TR880

	Page	Address	Data
When X=9	F	2B	50
When X=B or A	F	2B	58

- CCD-TR36/TR73/TR76/TR560

	Page	Address	Data
When X=9	F	2B	50
	F	34	02
When X=B	F	2B	58
	F	34	00

5. 28 MHz Original Oscillation Adjustment (VC board)

Adjust the 28 MHz oscillation of the synchronization clock.
If the oscillation is not 28 MHz, the period will be inaccurate or the image will not be in color.

Subject	Not required
Measurement Point	TP709 (CL)
Measuring Instrument	Frequency counter
Adjusting Element	CT701
Specified Value	14318181 ± 71 Hz

Adjusting method:

1) Use CT701 to adjust the oscillation frequency to 14318181 ± 71 Hz.

6. V SUB Adjustment

Set the CCD imager V SUB voltage to the voltage specified for the imager.

Subject	Not required
Adjustment Page	F
Adjustment Address	04

Adjusting Method:

1) Read the V SUB voltage code of the CCD imager.
   Obtain the corresponding V SUB data from the following table.
2) Set data: 01 to page: 6, address: 00.
3) Set the V SUB data to page: F, address: 04.
4) Press the PAUSE button of the adjusting remote commander.

V SUB			V SUB		
Voltage Code	Data	Voltagee (Vdc) *1	Voltage Code	Data	Voltagee (Vdc) *1
e	71	9.0	q	AD	14.0
f	77	9.5	r	B3	14.5
g	7D	10.0	s	B9	15.0
h	83	10.5	t	BF	15.5
j	89	11.0	u	C5	16.0
k	8F	11.5	v	CB	16.5
l	95	12.0	w	D1	17.0
m	9B	12.5	x	D7	17.5
n	A1	13.0	y	DD	18.0
p	A7	13.5	z	E3	18.5

*1: The V SUB voltages (TP703) given are reference values.

7. VRG Adjustment

Set the CCD imager V RG voltage to the voltage specified for the imager.

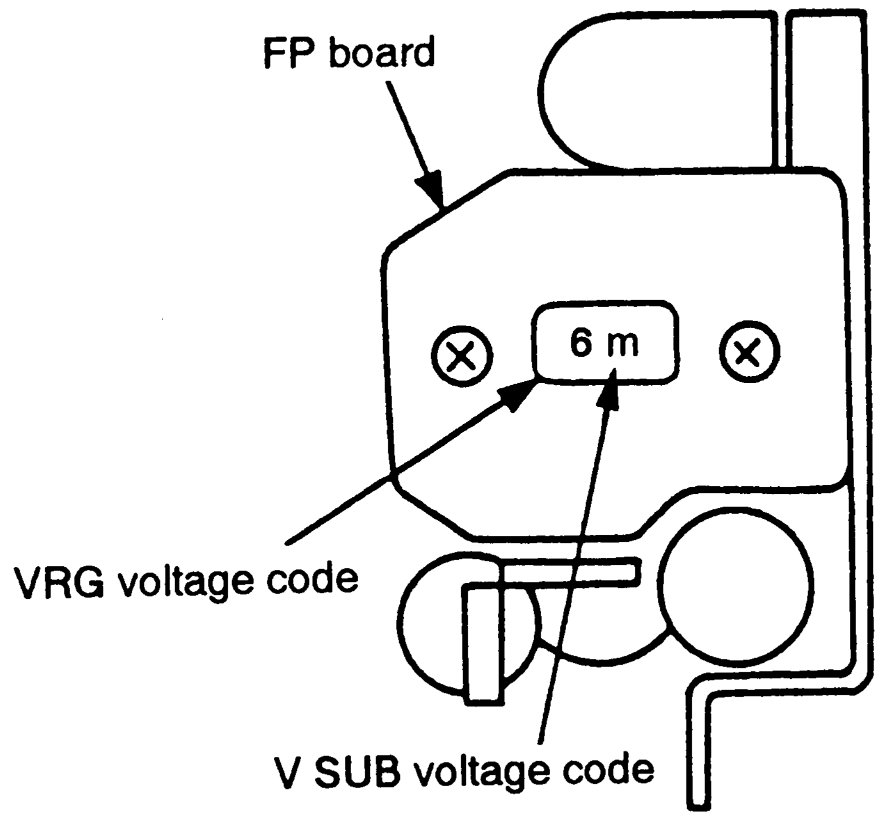
Subject	Not required
Adjustment Page	F
Adjustment Address	05

Adjusting Method:

1) Read the VRG voltage code of the CCD imager.
   Obtain the corresponding VRG data from the following table.
2) Set data: 01 to page: 6, address: 00.
3) Set the VRG data to page: F, address: 05.
4) Press the PAUSE button of the adjusting remote commander.

VRG		
Voltage Code	Data	Voltage (Vdc) *2
1	34	1.0
2	4E	1.5
3	69	2.0
4	83	2.5
5	9E	3.0
6	B8	3.5
7	D3	4.0

*2: The VRG voltages (TP707) given are reference values.



(Example) When "6m" is displayed:
The V SUB voltage code is "m" and therefore the V SUB data will be "9B".
The VRG voltage code is "6" and therefore the VRG data will be "B8".

Fig. 6-1-7.

8. Flange Back Adjustment

The flange back adjustment for the inner focus lens is performed automatically.

Subject	Chart for flange back adjustment (2000 ± 5 mm from the front side of the lens Luminance: 300 ± 50 lux)
Measurement Point	Check the operations on the TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	16, 17, 18, 19, 1A, 1B

Adjusting method:

1) Check that the flange back adjustment chart center and the exposure display center coincide at both zoom lens TELE end and WIDE end.
2) Set data: 01 to page: 6, address: 00.
3) Check that the data of page: 6, address: 21 is 00.
4) Check that the page: F, address: 16 to 1B data is at the initial value. (Refer to Table 6-1-2. "Page F address list")
5) Set data: 13 to page: 6, address: 01 and press the PAUSE button of the adjusting remote commander.
6) Set data: 15 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
   (The adjustment data is automatically input to page: F, addresses: 16 to 1B.)
7) Check that the data of page: 6, address: 21 is 01.
   (Display indicating flange back adjustment completion)

Processing after completing adjustments

1) Turn off the main power supply (6.3V).

9. Flange Back Check

Subject	Siemens star (2m from the front of the lens)
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	
Specified Value	Focused at the TELE end and WIDE end.

Checking method:

1) Place the Siemens star 2m from the front of the lens.
2) To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appears on the image.
3) Shoot the siemens star with the zoom TELE end.
4) Turn ON the auto focus.
5) When the lens is focused, turn OFF the auto focus. (Note 2)
6) Shoot the siemens star with the zoom WIDE end.
7) Check that the lens is focused.

Note 1: Input the following data for CCD-TR83/TR93/TR600/TR670/TR880.
1) Set data: 02 to page: 6, address: 32.
2) Set data: 01 to page: 6, address: 33.

Note 2: When the auto focus is ON, the lens can be checked if it is focused or not by observing the data on page A of the adjusting remote commander.
1) Set data: 0C to page: 6, address: 02.
2) Page A shows the state of the focus.

A : 00 : XX
→ (Odd: Focused
Even: Unfocused)

Processing after compleating adjustments

1) Set data: 00 to page: 6, address: 02.

For CCD-TR83/TR93/TR600/TR670/TR880

2) Set data: 00 to page: 6, address: 32.
3) Set data: 00 to page: 6, address: 33.

10. HALL Adjustment

To eliminate the differences in the outputs of the hall element attached to the iris for detecting the position of the lens iris, adjust the hall AMP gain and hall offset.

Subject	Not required
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	06, 07
Specified Value	33 to 37 during IRIS OPEN B4 to B8 during IRIS CLOSE

Adjusting method:

1) Set data: 01 to page: 6, address: 00.
2) Set data: 01 to page: 1, address: 00.
3) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
4) Set data: 03 to page: 6, address: 02.
5) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 80 to page: F, address: 07, and press the PAUSE button of the adjusting remote commander.
7) Set data: 40 to page: F, address: 06, and press the PAUSE button of the adjusting remote commander.
8) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the monitor TV display), and this data is named W_2.
9) Set data: 30 to page: F, address: 06, and press the PAUSE button of the adjusting remote commander.
10) Read the DDS display data, and this data is named W_1.
11) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
12) Read the DDS display data, and this data is named K_1.
13) Set data: 40 to page: F, address: 06, and press the PAUSE button.
14) Read the DDS display data, and this data is named K_2.
15) Convert W_1, W_2, K_1, K_2 to decimal notation, and obtain W_1', W_2', K_1', K_2'. (Refer to Table 6-1-3. "Hexadecimal notation-decimal notation conversion table".)
16) Calculate X_1' using the following equations (decimal notation calculation).

$$A' = W_2' + K_1' - W_1' - K_2' \cdots\cdots \text{Equation 1}$$

$$B' = W_1' - K_1' \cdots\cdots \text{Equation 2}$$

$$X_1' = \frac{2080 + (48 \times A') - (16 \times B')}{A'} \cdots\cdots \text{Equation 3}$$

17) Convert X_1' to hexadecimal notation, and obtain X_1. (Round off to one decimal place)
18) Set data: X_1 to page: F, address: 06, and press the PAUSE button of the adjusting remote commander.
19) Change the data of page: F, address: 07, and adjust the DDS display data to "34".
20) Press the PAUSE button of the adjusting remote commander.
21) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
22) Read the DDS display data, and this data is named W_0. If W_0 lies within the "B4" to "B8" range, perform "Processing after completing adjustments". If it lies outside the range, perform the following adjustments.
23) Convert W_0 to hexadecimal notation, and obtain W_0'.
24) Calculate X_2' using the following equations (decimal notation calculation).

$$C' = W_0' - B' - 52 \cdots\cdots \text{Equation 4}$$

$$X_2' = \frac{(130 - B') \times (X_1' - 48) + 48 \times C'}{C'} \cdots\cdots \text{Equation 5}$$

(X_1' and B' are values obtained from equations 2 and3)

25) Convert X_2' to hexadecimal notation and obtain X_2. (Round off to one decimal place)
26) Set data X_2 to page: F, address: 06, and press the PAUSE button of the adjusting remote commander.
27) Change the data of page: F, address: 07, and adjust the DDS display data to "B6".
28) Press the PAUSE button of the adjusting remote commander.
29) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
30) Check that the DDS display data lies within the "32" to "36" range.

Processing after Completing Adjustments

1) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Page D protect mode setting.
   Page: 1, address: 00, data: 00

11. Picture Frame Setting

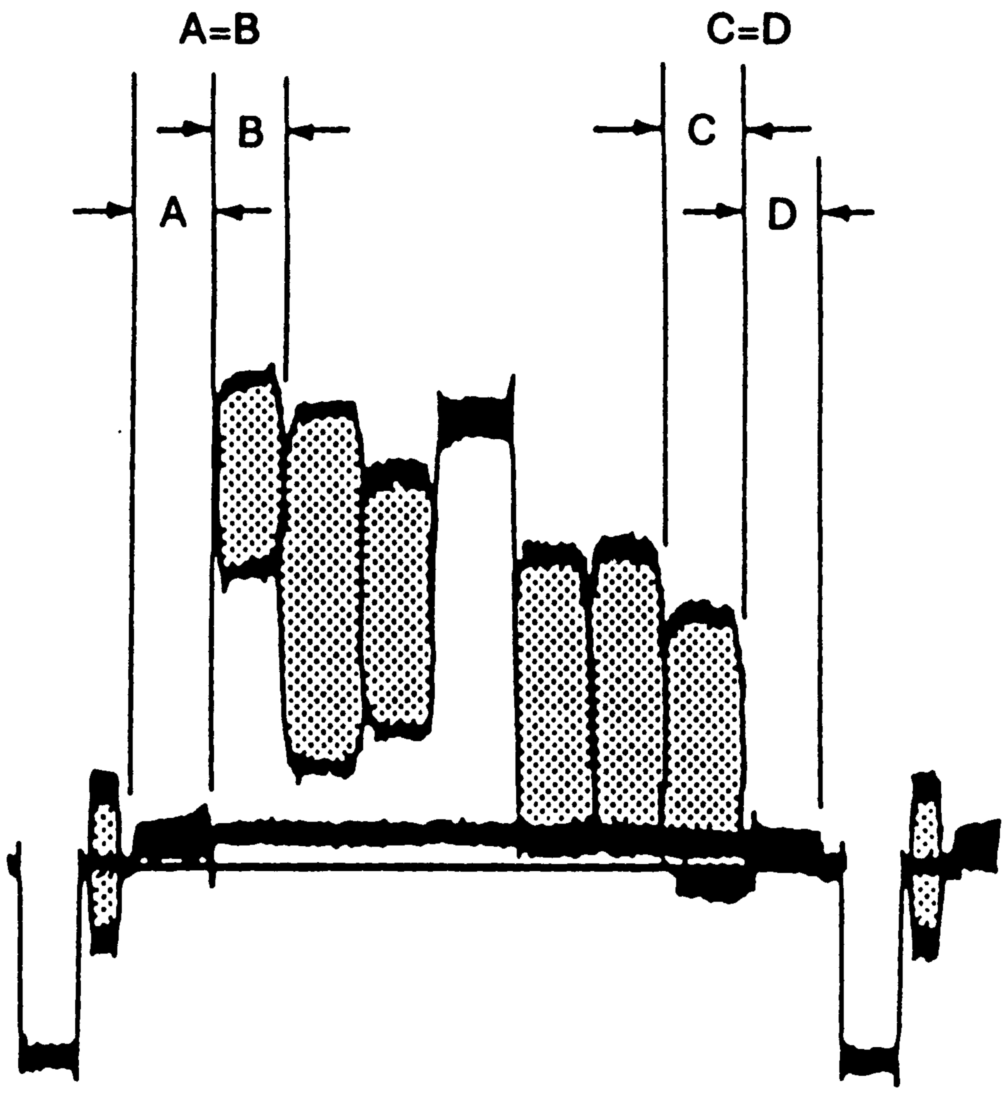
Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope and TV monitor.
Specified Value	A=B, C=D, t=0 ± 0.1 msec

Setting method:

1) Turn the auto focus off.
2) Adjust the focus.
3) Adjust the zoom and the camera direction, and set to the specified position.
4) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using "color bar chart standard picture frame".

Check on the oscilloscope

1. horizontal period



2. Vertical period

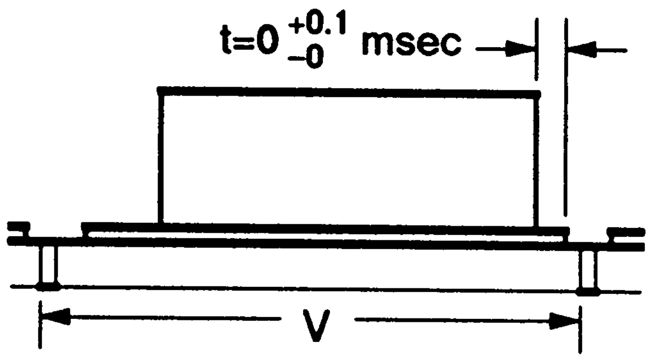


Fig. 6-1-8.

Check on the TV monitor

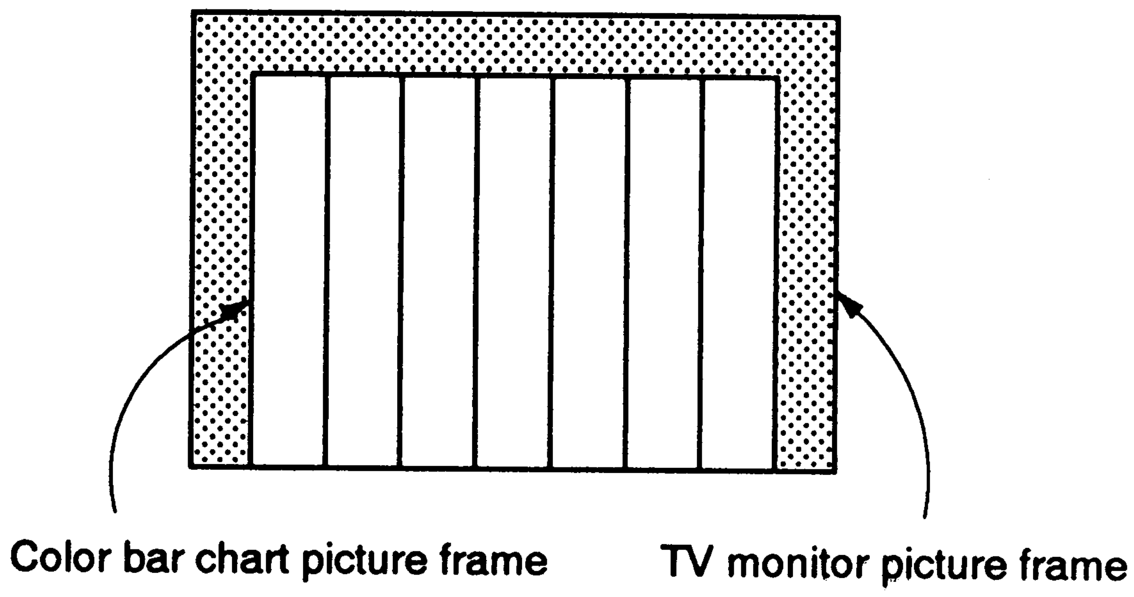


Fig. 6-1-9.

12. Color Reproduction Adjustment

Adjust the color separation matrix coefficient so that the proper color reproduction is produced.

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	08, 09, 0A, 0B
Specified Value	All color luminance points should settle within each color reproduction frame.

Adjusting method:

1) Set data: 01 to page: 6, address: 00.
2) Set data: 00 to page: 6, address: 03.
3) Set data: F1 to page: F, address: 10, and press the PAUSE button of the adjusting remote commander.
4) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
5) Change the data of addresses 08, 09, 0A and 0B of page: F, and settle each color luminance point in each color reproduction frame.

   Note 1: Be sure to press the PAUSE button of the adjusting remote commander before changing the addresses.
   If not, the new data will not be written to the memory.
6) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

1) Set data: E0 to page: F, address: 10 and press the PAUSE button of the adjusting remote commander.
2) Set data: 10 to page: 6, address: 03.

For CCD-TR36/TR73/TR76/TR560

Burst position

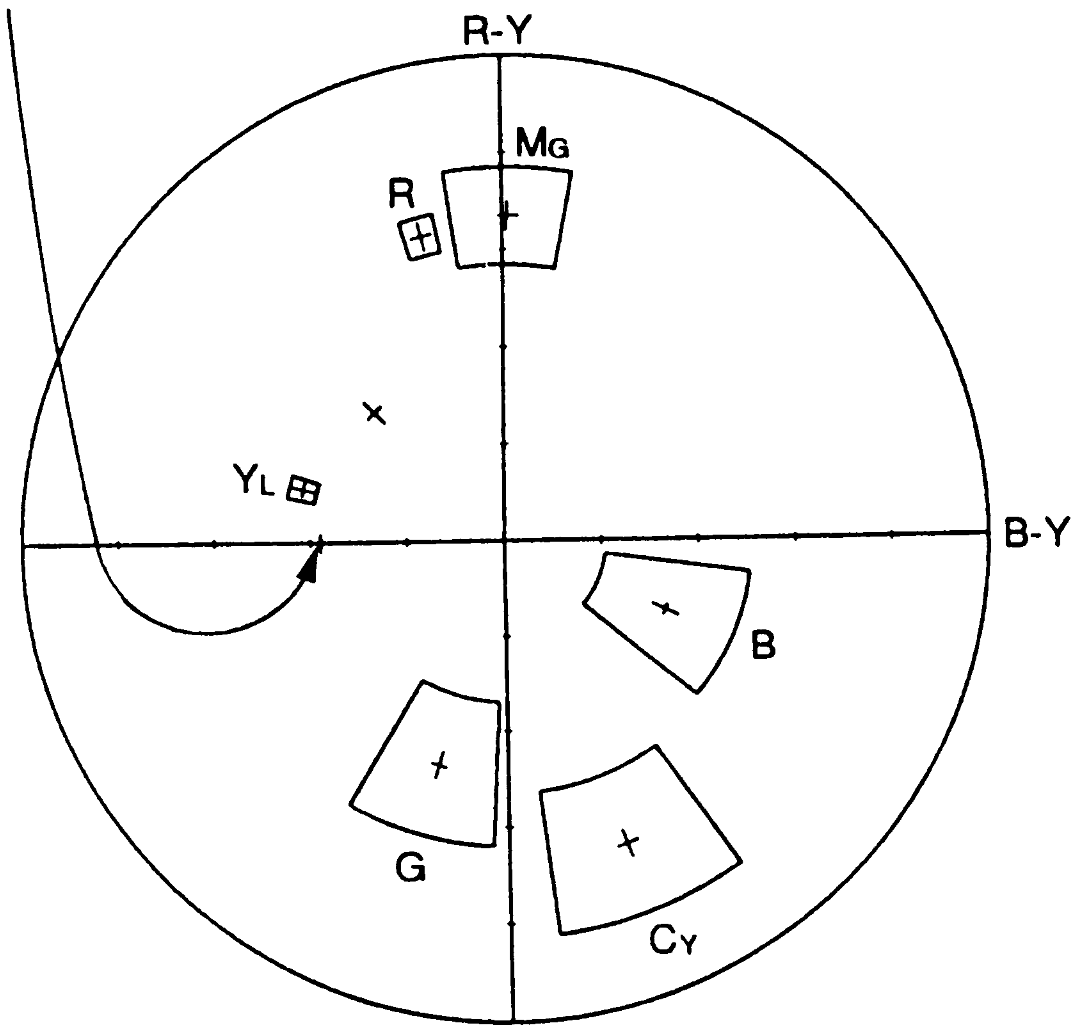


Fig. 6-1-10.

For CCD-TR83/TR93/TR100/TR600/TR670/TR880

Burst position

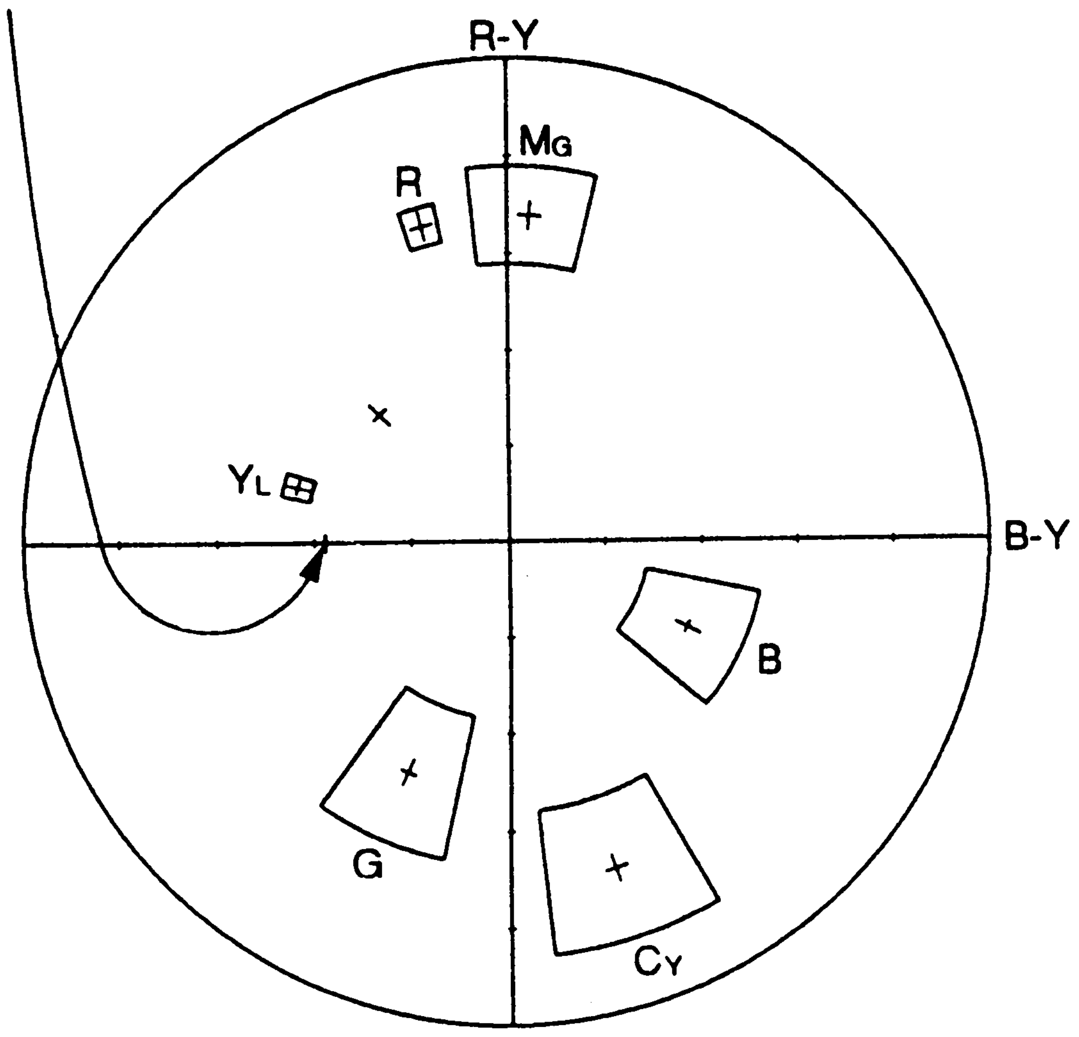


Fig. 6-1-11.

13. IRIS IN/OUT Adjustment (VC board)

For the unit to judge if the white balance is indoors or outdoors in auto white balance operations, measure the light level and write it in the EEPROM.

If the level is not correct, the white balance will not be accurate.

Subject	White pattern
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	13, 14

Adjusting method:

1) Set data: 01 to page: 6, address: 00.
2) Set data: 01 to page: 1, address: 00.
3) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
4) Set data: 0E to page: 6, address: 02.
5) Set data: 0B to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Read the DDS display data (Note 1), and take the upper two digits as D_1 and the lower two as D_2.
7) Convert D_1 to a decimal number and obtain D_1'. (Refer to Table 6-1-3. "Hexadecimal Notation-Decimal Notation Conversion Table".)
8) Calculate D_3' using the following equations. (Equations 1 and 2 are for decimal notation calculation)

   When $D_2 \geq$ D0

   $D_3'=D_1'-21$ ·································Equation 1

   When $D_2 <$ D0

   $D_3'=D_1'-22$ ·································Equation 2
9) Convert D_3' to a hexadecimal number and obtain D_3.
10) Set D_3 to page: F, address: 13, and press the PAUSE button of the adjusting remote commander.
11) Set data: 09 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
    (IND0.5 SHUTTER mode setting)
12) Read the DDS display data (Note 1), and take the upper two digits as D_4 and the lower two as D_5.
13) Convert D_4 to a decimal number and obtain D_4'. (Refer to Table 6-1-3. "Hexadecimal Notation-Decimal Notation Conversion Table".)
14) Calculate D_6' using the following equations. (Equations 3 and 4 are for decimal notation calculation)

    When $D_5 \geq$ F0

    $D_6'=D_4'-13$ ····································Equation 3

    When $D_5 <$ F0

    $D_6'=D_4'-14$ ····································Equation 4
15) Convert D_6' to a hexadecimal number and obtain D_6.
16) Set D_6 to page: F, address: 14, and press the PAUSE button of the adjusting remote commander.

Note 1: The right four digits of the display data at the right bottom side of the EVF and monitor TV is the LIGHT LEVEL data. If the lower digits change severely and cannot be read, record it on a tape once, play it back by frame feeding, and obtain the average value.

Processing after Completing Adjustments

1) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 1, address: 00.
3) Set data: 00 to page: 6, address: 00, and press the PAUSE button of the adjusting remote commander.
4) Set data: 00 to page: 6, address: 02.

14. MAX GAIN Adjustment (VC board)

Correct the differences in the minimum illuminance.

If the illuminance is not consistent, the image level required for taking subjects in low illuminance will not be produced (dark).

Subject	White pattern standard picture frame
Measurement Point	TP607 (CAM Y)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	15
Specified Value	CCD-TR83/TR93/TR100/TR600/ TR670/TR880 A=450 mV Others A=620 mV

Adjusting method:

1) Set data: 01 to page: 6, address: 00.
2) Set data: 04 to page: F, address: 2D.
3) Set data: 19 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
4) Change the data of page: F, address: 15, and adjust so that the signal level (A) becomes the specified value.
   Note: The data of address: 15 should be 70 to FF.
5) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
2) Return the data page:F address: 2D to an initialized value.

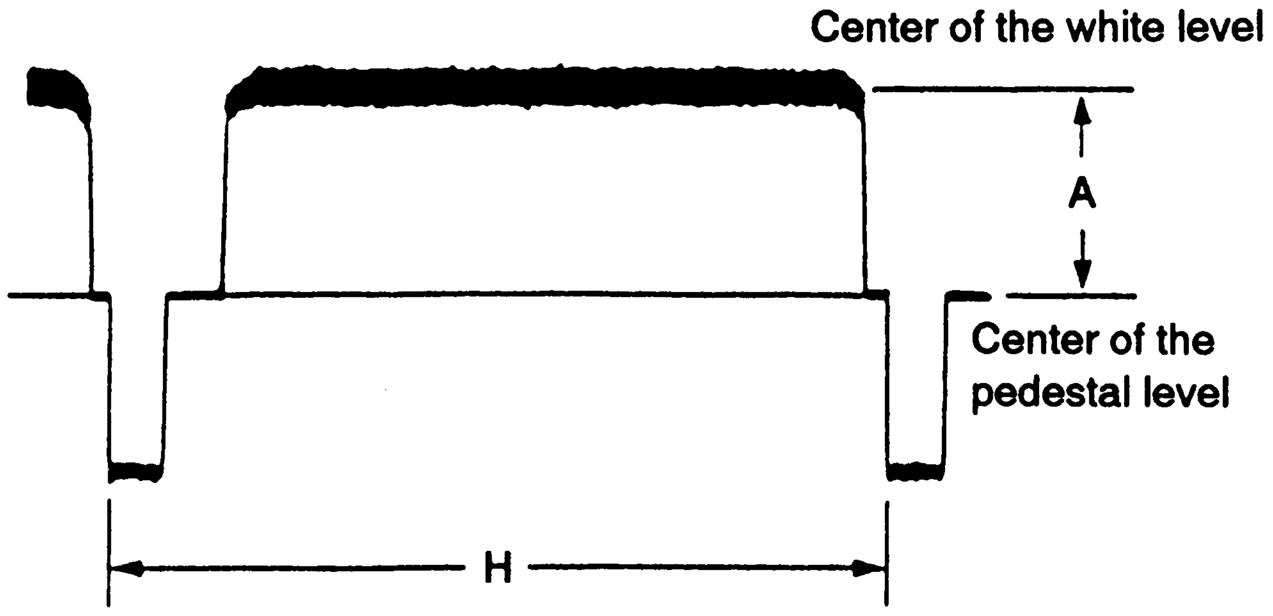


Fig. 6-1-12.

16. REC Y Level Adjustment (VS board)

Recording level of luminance signal setting. If deviated, this causes black stretch over modulation noise or color shade.

Mode	Record
Signal	No signal
Measurement Point	Pin ⑥ of CN102 (REC 2)
Measuring Instrument	Oscilloscope Board width limit: 20 MHz
Adjustment Page	D
Adjustment Address	47, 43, 46, 42
Specified Value	A=145 ± 5 mVp-p

Note 1: Use a normal MP type tape.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) After memorizing the data of address: 3B of page: D, set data: FF to the address.
3) Set data: FF to address: 43 of page: D, and press the PAUSE button of the adjusting remote commander.
4) Change the data of page: D, address: 47, and adjust so that REC Y level (A) becomes the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Set data to address: 42, 43, 46 of page: D as shown in following table.

(Be sure to press the PAUSE button of the adjusting remote control unit after setting each data.)

Address	Data
42	Same data as address: 47
43	Same data as address: 47
46	Same data as address: 47

7) Set the data memorized at step 2) to address: 3B of page: D and press the PAUSE button of the adjusting remote commander.

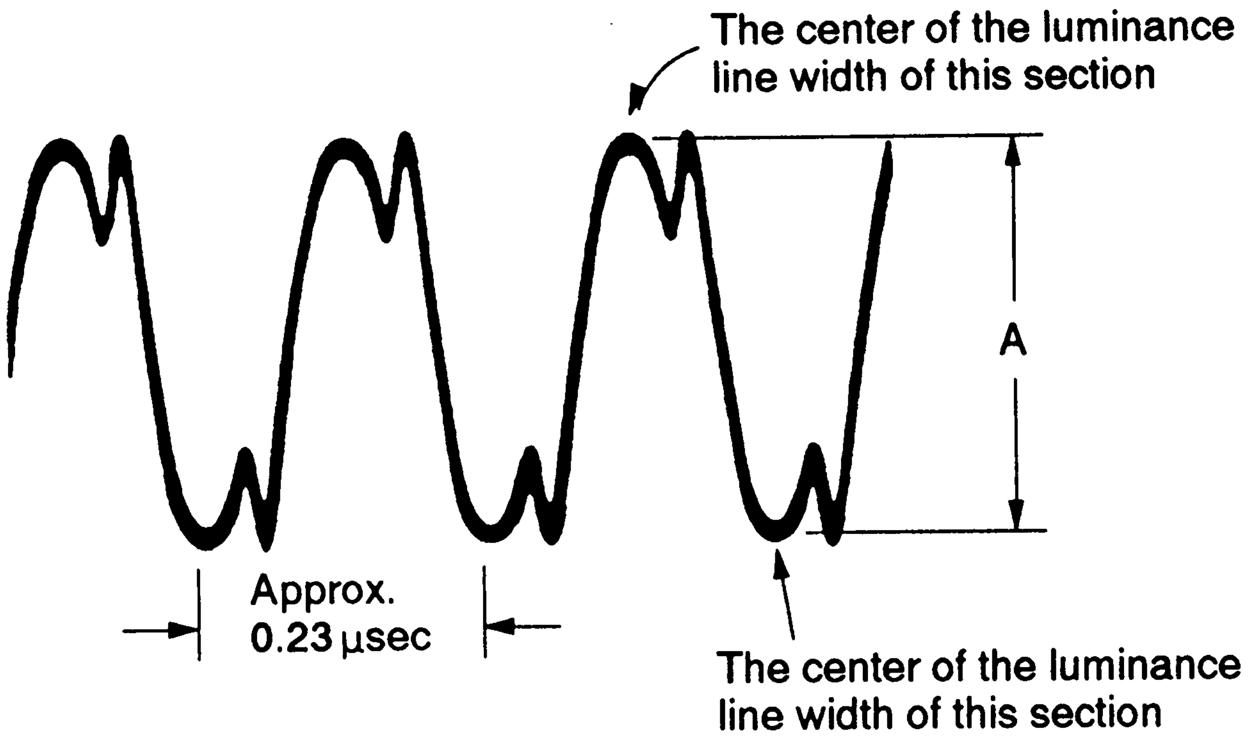

The center of the luminance line width of this section
A
Approx. 0.23 µsec
The center of the luminance line width of this section

Fig. 6-3-22.

17. REC L Adjustment (VS board)

Set the recording levels of the REC AFM signal and REC ATF signal. If the level is too low, the audio S/N will deteriorate, tracking will not be stable, or SP/LP will not be discriminated properly. If too high, color beets will be produced on the self-recording/playback image.

Mode	Record
Signal	No signal (VIDEO input)
Measurement Point	Pin ⑥ of CN102 (REC 2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	3B, 39, 3A, 38
Specified Value	A=6.7 ± 1.0 mVp-p

Note 1: Use a MP type tape.

Note 2: AU board is required for this adjustment.

Note 3: Don't insert any plug into the right audio input terminal.

Connection:

1) Connect Emitter of Q113 and GND with a jumper wire.
2) Connect Pin ⑤ of IC508 and GND with a 0.01 µF capacitor. (Parts cord: 1-101-004-00)

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 3B, and adjust so that the REC AFM signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Read the data of page: D, address: 3B, and this data is named D3B.
5) Set data: D3B to address: 39 of page D.
6) Press the PAUSE button of the adjusting remote commander.
7) Convert D3B to decimal notation, and obtain D3B'. (Refer to Table 6-1-3. "Hexadecimal notation-decimal notation conversion table")
8) Culculate D3A' using following equation (decimal notation calculation).
   D3A'=D3B'−7
9) Convert D3A' to hexadecimal notation, and obtain D3A.
10) Set data: D3A to address: 3A of page D.
11) Press the PAUSE button of the adjusting remote commander.
12) Set data: D3A to address: 38 of page D.
13) Press the PAUSE button of the adjusting remote commander.
14) Perform "REC CHROMA Level Adjustment".

15. Auto White Balance Standard Data Input

Subject	White pattern standard picture frame
Adjustment Page	F
Adjustment Address	0C, 0D, 0E, 0F

Adjusting method:

1) Turn the power of the unit OFF/ON.
2) Set data: 01 to page:6, address: 00
3) Check that the data of page: 6, address: 11 is 00.
4) Wait for 2 seconds.
5) Set data: 11 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 0D to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
   (When the standard data is taken in, the data will be automatically input to addresses 0C to 0F of page F.)
7) Check that the data of page: 6, address: 11 is 01.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.

16. Auto White Balance Adjustment

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	Check with the DDS display on the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	11, 12
Specified Value	R ratio: 2B40 to 2BC0 B ratio: 5E00 to 5F00

Adjusting method:

1) Place the C14 filter for color temperature correction on the lens.
2) Set data: 01 to page: 1, address: 00.
3) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
4) Set data: 01 to page: 6 address: 00.
5) Set data: D0 to page: F, address: 10, and press the PAUSE button of the adjusting remote commander.
6) Set data: 04 to page: 6, address: 02.
7) Change the data of page: F, address: 11, and adjust the average value of the DDS display data (the display data at the bottom right of the EVF or the TV monitor) to the R ratio specified value.
8) Press the PAUSE button of the adjusting remote commander.
9) Set data: 05 to page: 6, address: 02.
10) Change the data of page: F, address: 12, and adjust the average value of the DDS display data to the B ratio specified value.
11) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

1) Set data: 00 to page: F, address: 10, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 6, address: 02.
4) Page D protect mode setting.
   Page: 1, address: 00, data: 00

17. White Balance Check

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction ND filter 1.0 and 0.3
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Specified Value	Fig. 6-1-13. A to C

Checking method:

1) Check that the lens is not covered with either filter.
2) Set data: 01 to page: 6, address: 00.
3) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
4) Check that the center of the white luminance point is within the circle shown in Fig. 6-1-13.A.
5) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 23 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
7) Place the C14 filter on the lens.
8) Check that the center of the white luminance point settles in the circle shown in Fig. 6-1-13. B.
9) Remove the C14 filter, and place the ND filter 1.3 (1.0+0.3) on the lens.
10) Check that the center of the white luminance point settles in the circle shown in Fig. 6-1-13. C.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 6, address: 00, and press the PAUSE button.

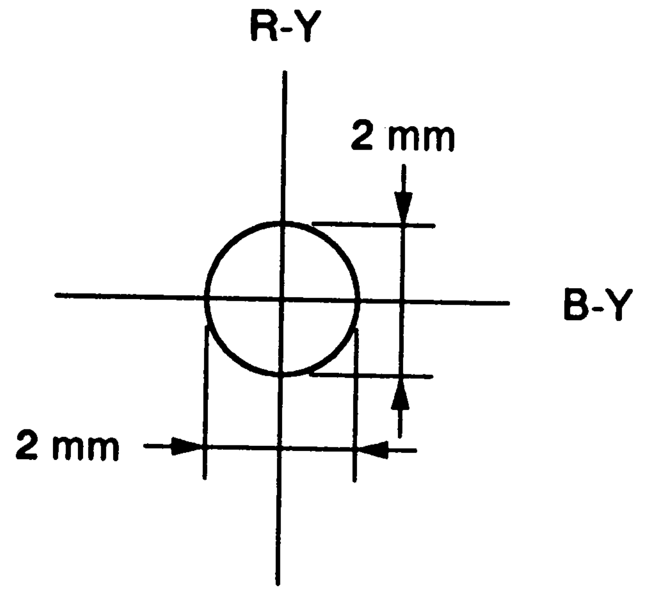


Fig. 6-1-13. A

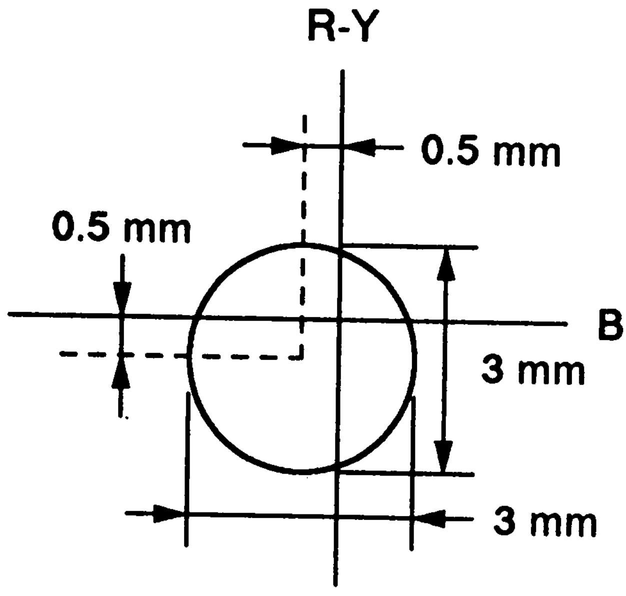


Fig. 6-1-13. B

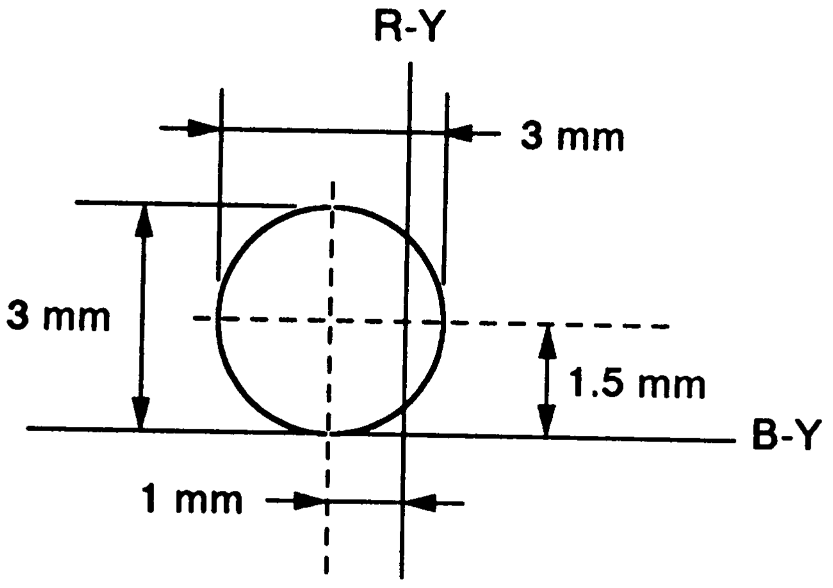


Fig. 6-1-13. C

18. VIDEO OUT Level Check

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal (Terminated at 75 Ω)
Measuring Instrument	Oscilloscope
Specified Value	Y level=660 ± 40 mV SYNC level=285 ± 20 mV BURST level=285 ± 20 mV

Checking method:

1) Check that the Y level, SYNC level and BURST level satisfy the specified values.

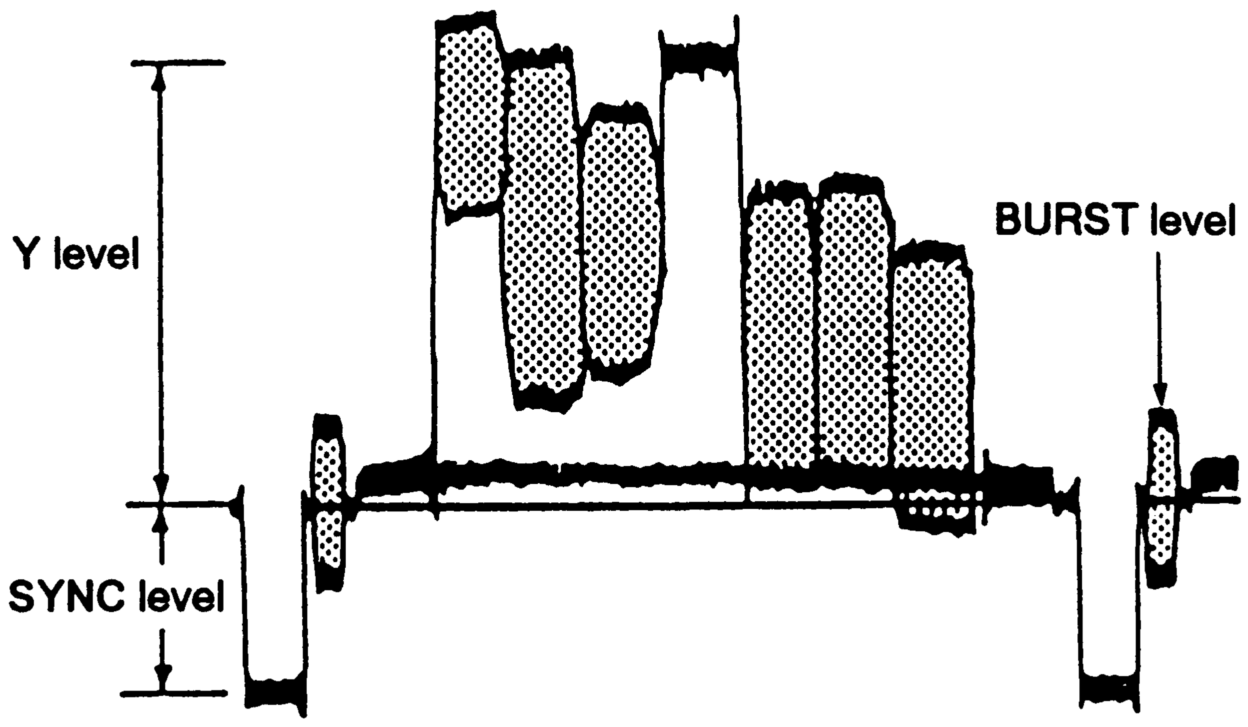


Fig. 6-1-14.

1-3. COLOR ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS (CCD-TR73/TR76/TR93/TR560/TR600/TR670/TR880)

Note 1: The backlight (fluorescent tube) is driven by a 800 Vp-p, 16 kHz AC power supply.
Therefore, be careful not to touch the backlight holder as you will receive an electric shock.

Note 2: When replacing the LCD unit, ensure there will be no damages by static electricity.

[Adjusting connector]

Some measuring points for adjusting the view-finder are concentrated at CN902 of the VF-73 board. Connect the measuring equipments via the measuring pin tool (J-6082-192-A). The following table lists the pin numbers and signal names of CN902.

Pin No.	Signal Name	Pin No.	Signal Name
1	LC COM	2	EVF GND
3	G OUT	4	13.5V
5	NC	6	12V
7	R OUT	8	B OUT
9	NC	10	PCO

Table 6-1-4.

[Video Input Signal for Adjusting]

If the signal column specifies "Color bar signal whose chroma signal and burst signal are turned off", input a color bar signal whose chroma signal and burst signal have been turned off to the video input pin as the video input signal for adjusting. Check that the signal level of Pin ⑪ of CN851 of the VF-72 board is 1 Vp-p before adjusting.

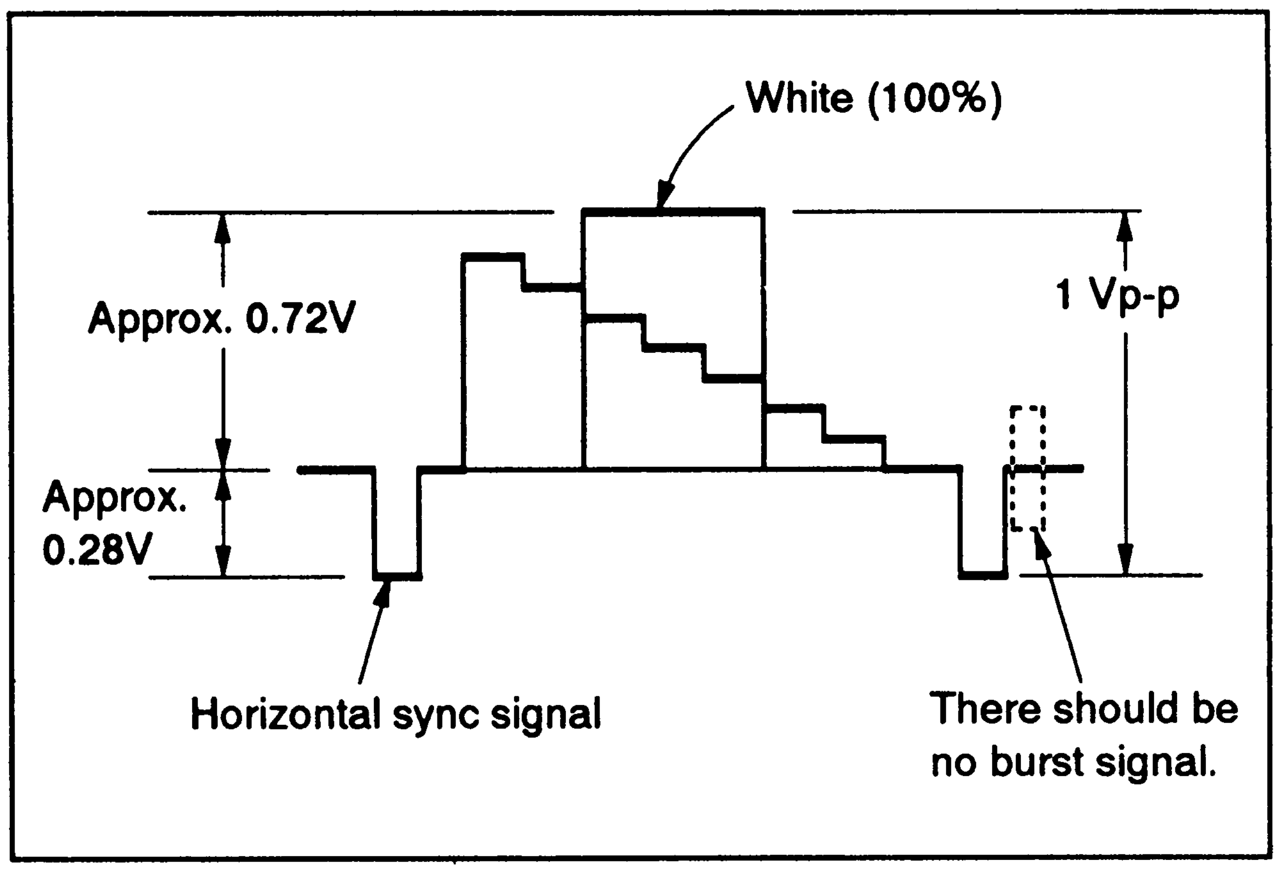


Fig. 6-1-15. Color bar signal whose chroma signal and burst signals are turned off

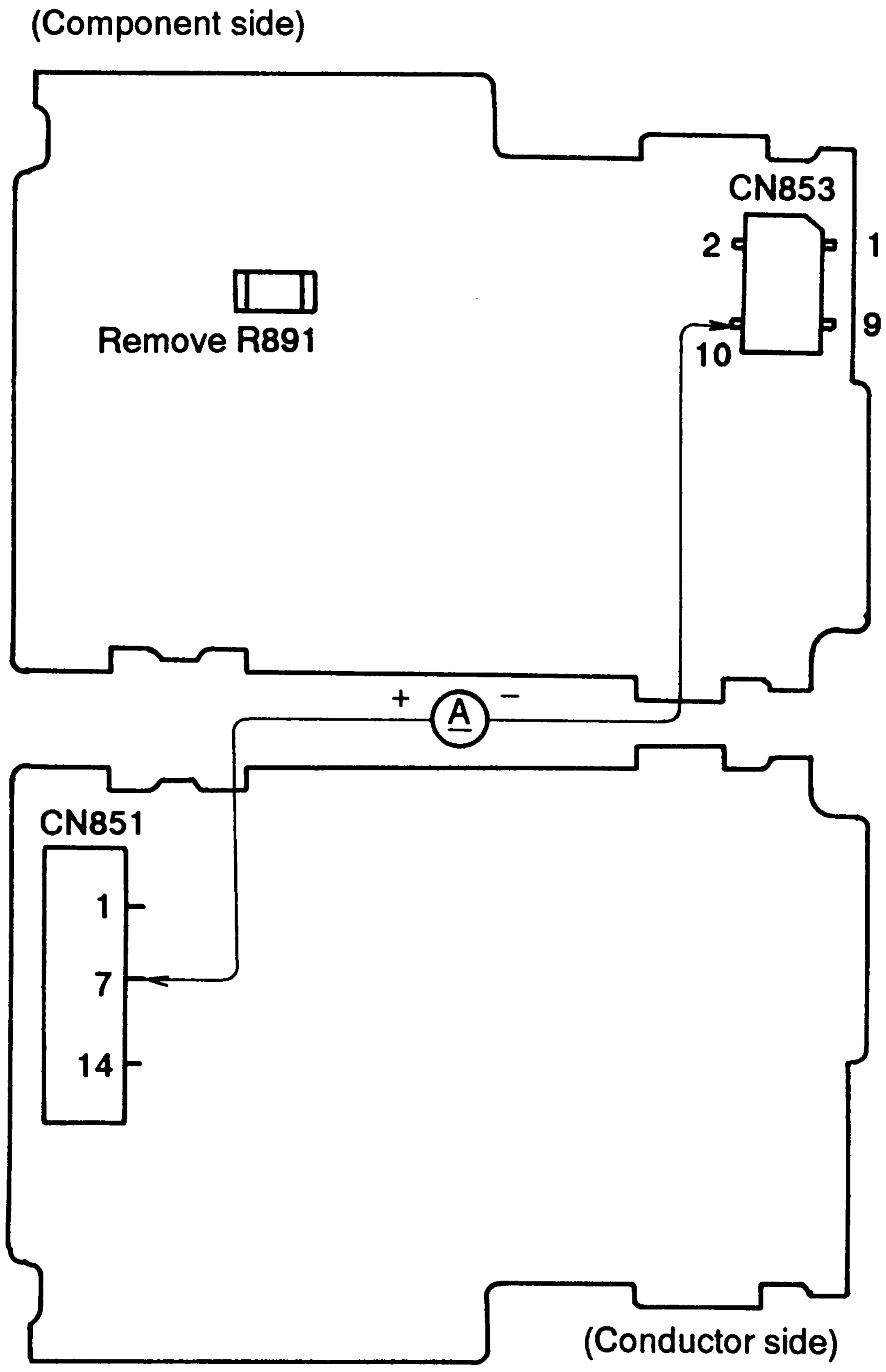
1. Current Consumption Adjustment (VF-72 board)

Adjust the luminance and color temperature of the back light.
If these are not correct, the image will be brighter or darker than normal.

Mode	Record
Signal	Color bar signal whose chroma signal and burst signal are turned off
Measurement Point	Remove R891 and measure + : Pin ⑦ of CN851 − : Pin ⑩ of CN853
Measuring Instrument	Ammeter
Adjustment Page	D
Adjustment Address	B7
Specified Value	67 ± 3 mA

Note 1: Wait for 30 secs. after the power supply has been turned on before this adjustment.
Note 2: After adjusting, connect R891.

Adjusting method:
1) Check that the voltage of Pin ⑦ of CN851 is 6.0 ± 0.1 Vdc.
2) Set data: 01 to page: 1, address: 00.
3) Change the data of page: D, address: B7, and adjust the current consumption to 67 ± 3 mA.
4) Press the PAUSE button of the adjusting remote commander.



VF-72 BOARD

Fig. 6-1-16.

2. Power Supply Voltage Check (VF-72, 73 board)

Mode	Record
Measuring Instrument	Digital voltmeter
EVF UNREG check	
Measurement Point	Pin ⑦ of CN851 (VF-72 board)
Specified Value	6.0 ± 0.05 Vdc
EVF 15V check	
Measurement Point	Pin ⑧ of CN851 (VF-72 board)
Specified Value	15.0 ± 0.1 Vdc
EVF 4.9V check	
Measurement Point	Pin ⑨ of CN851 (VF-72 board)
Specified Value	4.85 ± 0.05 Vdc
12.0V check	
Measurement Point	Pin ⑭ of CN901 (VF-73 board)
Specified Value	12 ± 0.3 Vdc
13.5V check	
Measurement Point	Pin ⑮ of CN901 (VF-73 board)
Specified Value	13.5 Vdc

3. EVR Initial Data Input

Mode	STOP
Signal	Arbitary
Adjustment Page	D

Adjusting method:
1) Set data: 01 to page: 1, address: 00.
2) Select page D, and input the data in the following table.

Note: To write in the nonvolatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time the data is set.

Address	Data
B0	A0
B1	AE
B2	95
B3	7A
B4	6A
B5	70
B6	90
B7	35
B8	7A
B9	7A
BA	70
BB	F0

4. VCO Adjustment (VF-73 board)

Set the free running frequency of the VCO.
If it is not correct, the image will waver.

Mode	Record
Signal	Color bar signal whose chroma signal and burst signal are turned off
Measurement Point	Pin ⑩ of CN902 (PCO)
Measuring Instrument	Oscilloscope (DC range)
Adjustment Page	D
Adjustment Address	B6
Specified Value	A=2.8 ± 0.1V

Adjusting method:

1) Check the GND level of the oscilloscope.
2) Set data: 01 to page: 1, address: 00.
3) Change the data of page: D, address: B6 and adjust the PCO voltage (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.

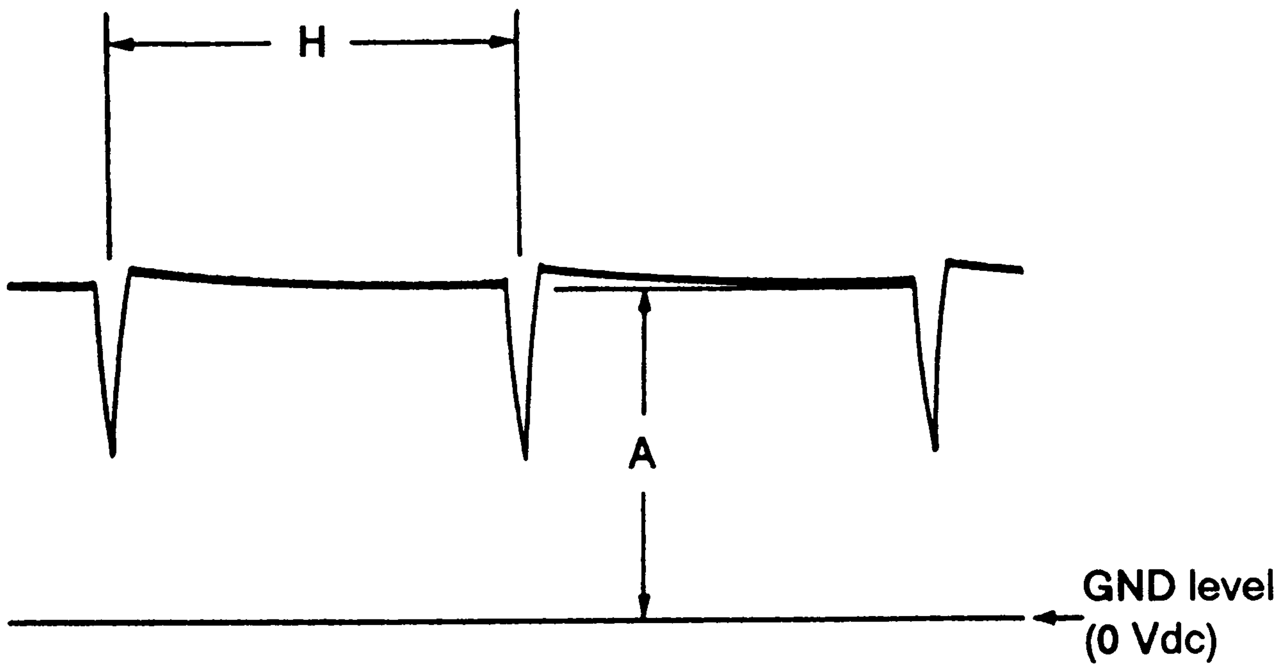


Fig. 6-1-17.

5. Bright Adjustment (VF-73 board)

Adjust to the proper LCD panel driving video signal level.
If it is not correct, the image will be saturated (whitish) or blackish.

Mode	Record
Signal	No signal
Measurement Point	Pin ③ of CN902 (G OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	B0
Specified Value	A=7.0 ± 0.1V

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: B0, and adjust the potential difference (A) between the reversed waveform pedestal and the non reversed waveform pedestal to the specified value.
3) Press the PAUSE button of the adjusting remote commander.

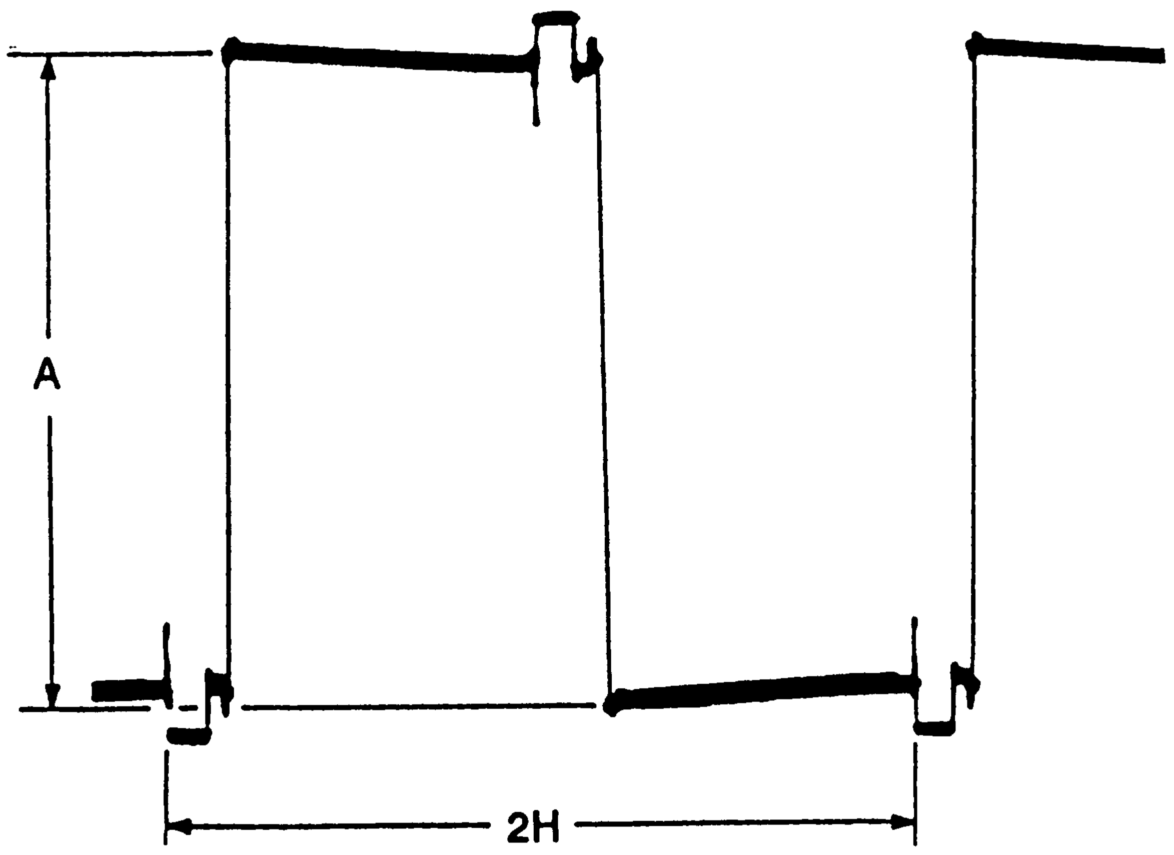


Fig. 6-1-18.

6. Contrast Adjustment (VF-73 board)

Set the contrast of the image.

If the contrast is not correct, the image will be blur (whitish) or saturated.

Mode	Record
Signal	Color bar signal whose chroma and burst signals are turned off
Measurement Point	Pin ③ of CN902 (G OUT)
Measuring Instrument	Oscilloscope External trigger: Pin ㉞ of IC902 (FRP)
Adjustment Page	D
Adjustment Address	B5
Specified Value	A=2.0 ± 0.1V

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: B5, and adjust the voltage (A) between the white (100%) and pedestal to the specified value.
3) Press the PAUSE button of the adjusting remote commander.

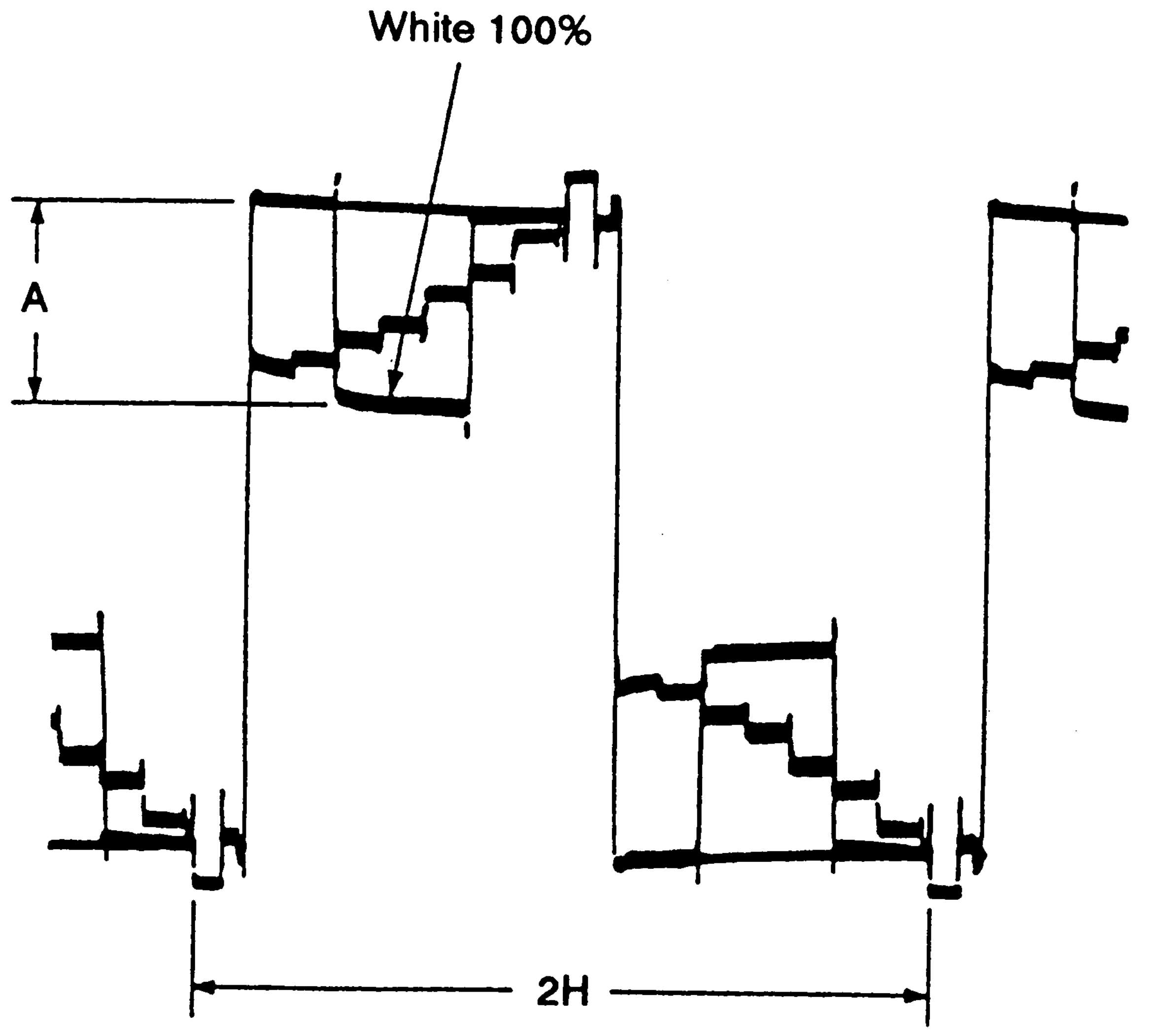


Fig. 6-1-19.

7. White Balance Adjustment

Adjust to the proper white balance level.

If it is not correct, the color reproducibility of the LCD panel will be poor.

Mode	Record
Signal	Color bar signal whose chroma and burst signals are turned off
Measurement Point	Check on the LCD display
Measuring Instrument	
Adjustment Page	D
Adjustment Address	B8, B9
Specified Value	The display should not be colored

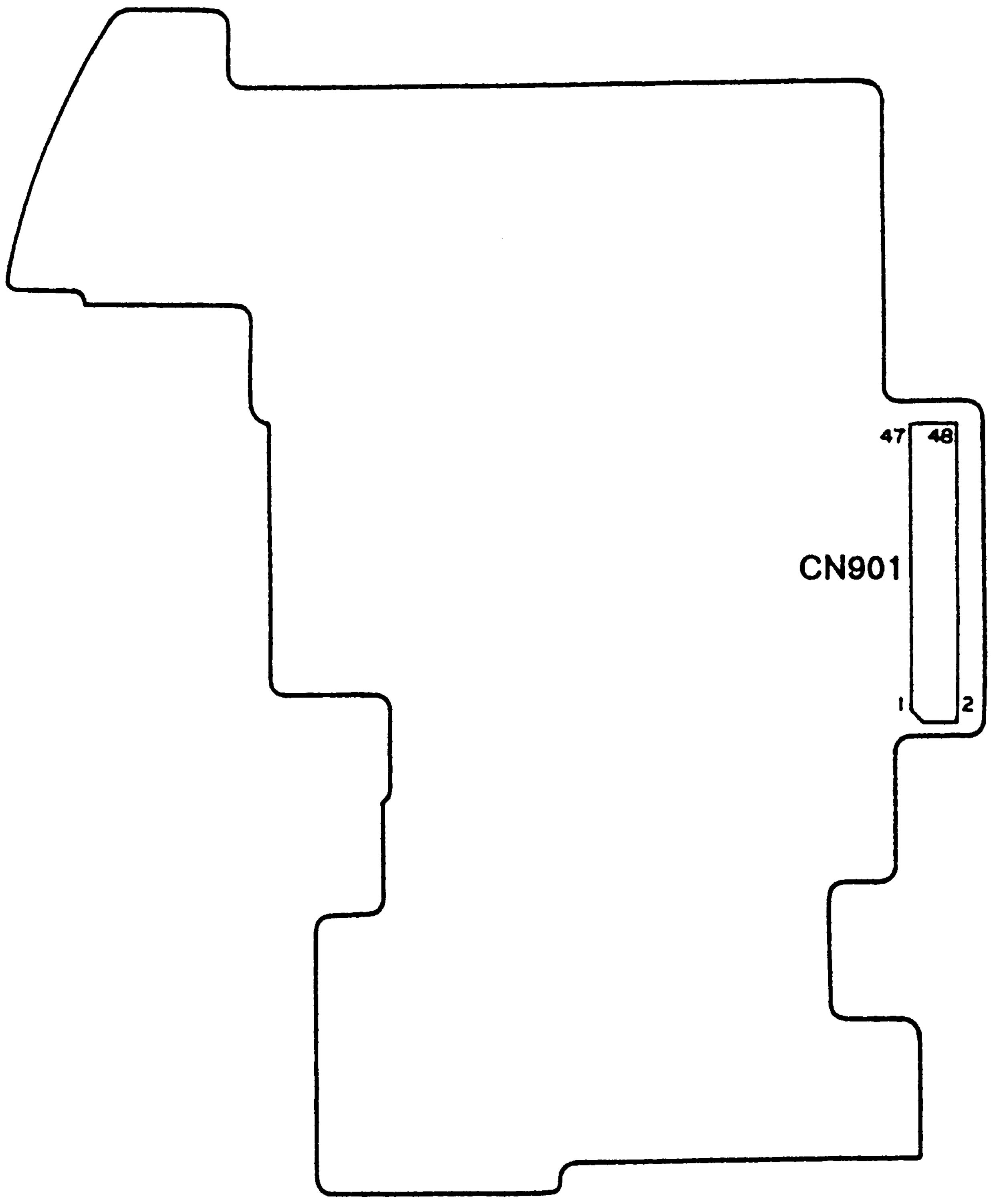
Note: Wait for more than 1 minute after the power supply has been turned on before this adjustment.

Adjusting method:

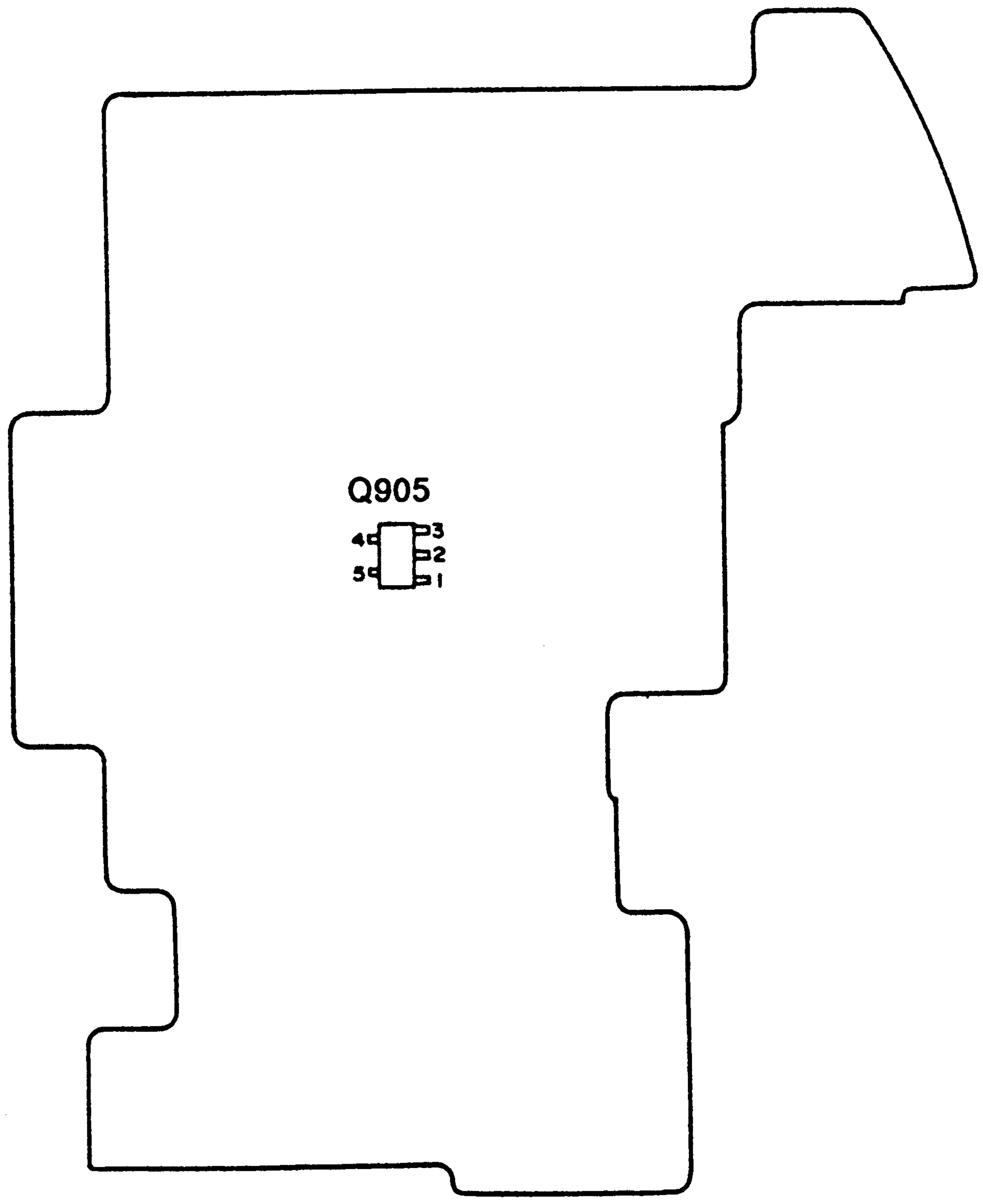
1) Set data: 01 to page: 1, address: 00.
2) Check that the LCD display is not colored. If it is, change the data of address: B8 and address: B9 of page: D, and adjustment the display is not colored.
3) Press the PAUSE button of the adjusting remote commander.

1-4. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

DD-78 BOARD (CONDUCTOR SIDE)

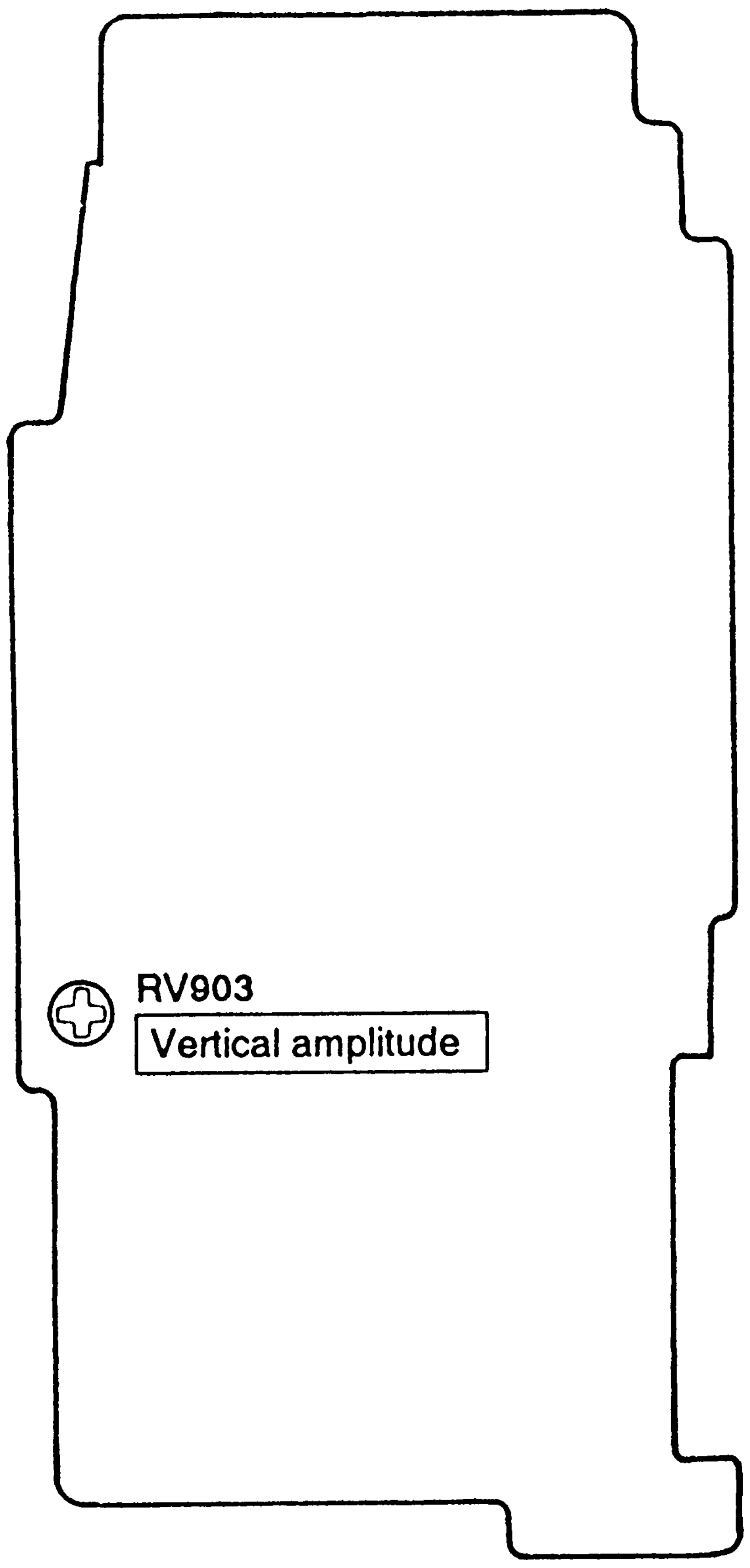


DD-78 BOARD (COMPONENT SIDE)

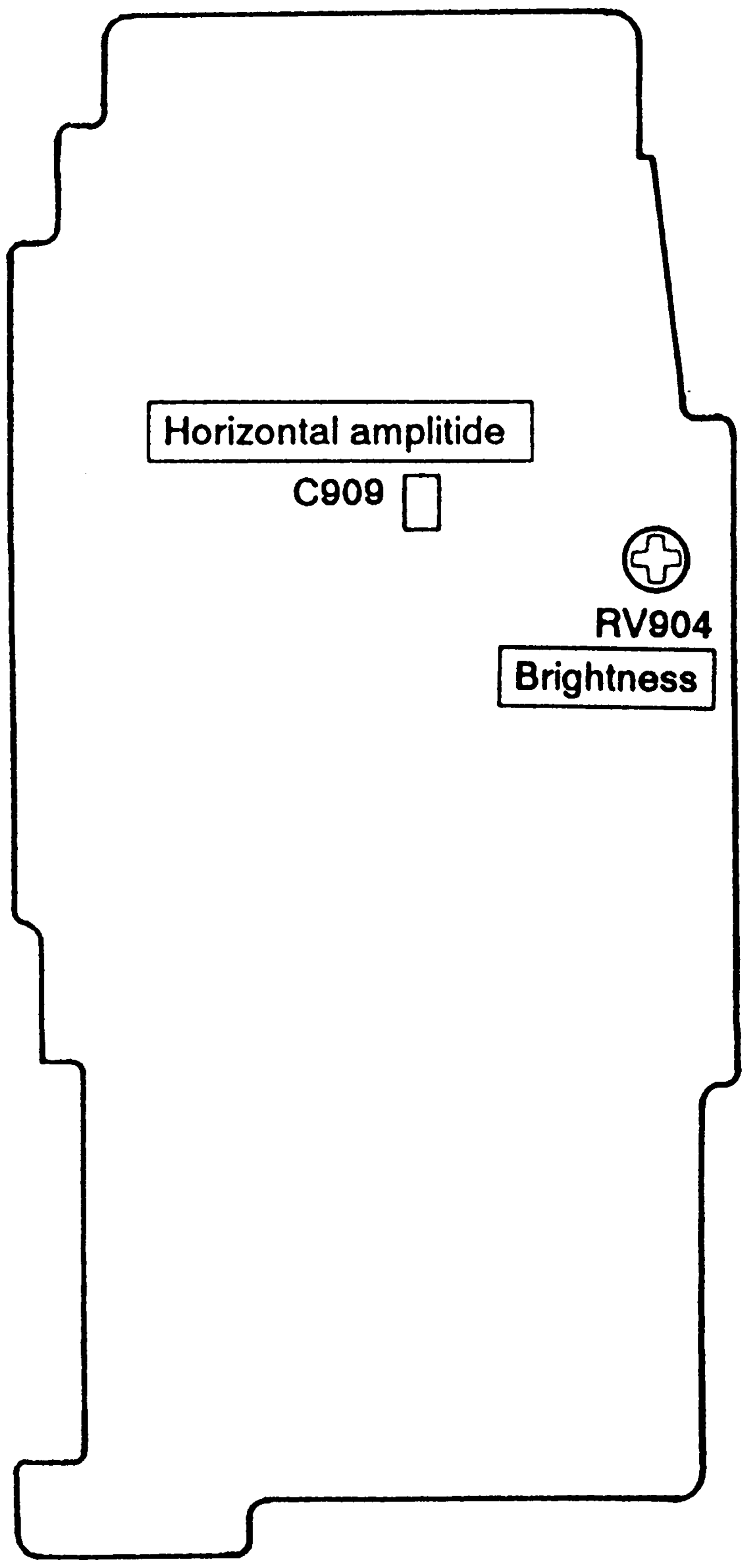


(CCD-TR36/TR83/TR100)

VF-65 BOARD (COMPONENT SIDE)

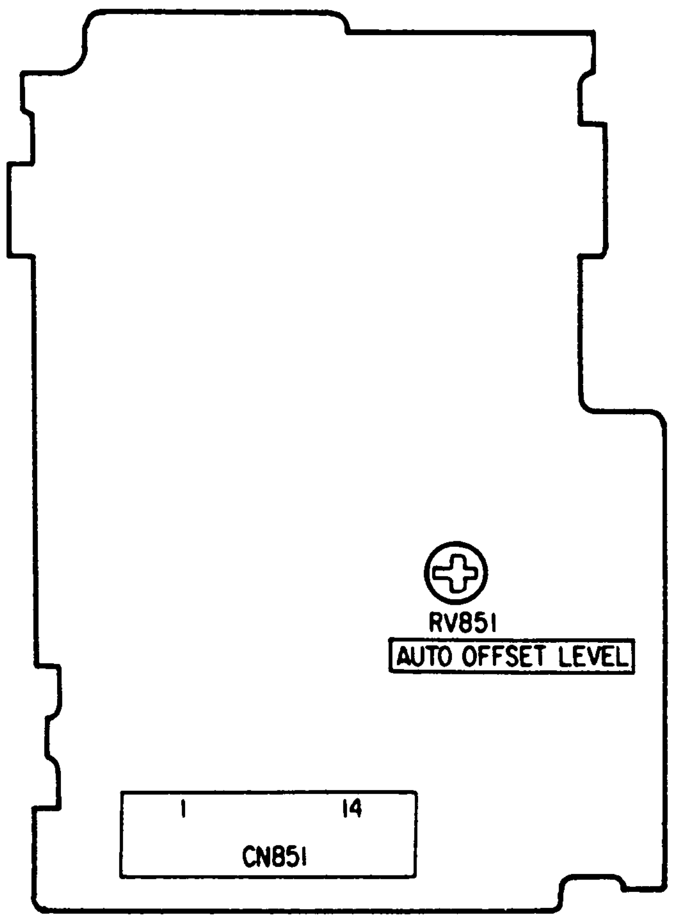


VF-65 BOARD (CONDUCTOR SIDE)

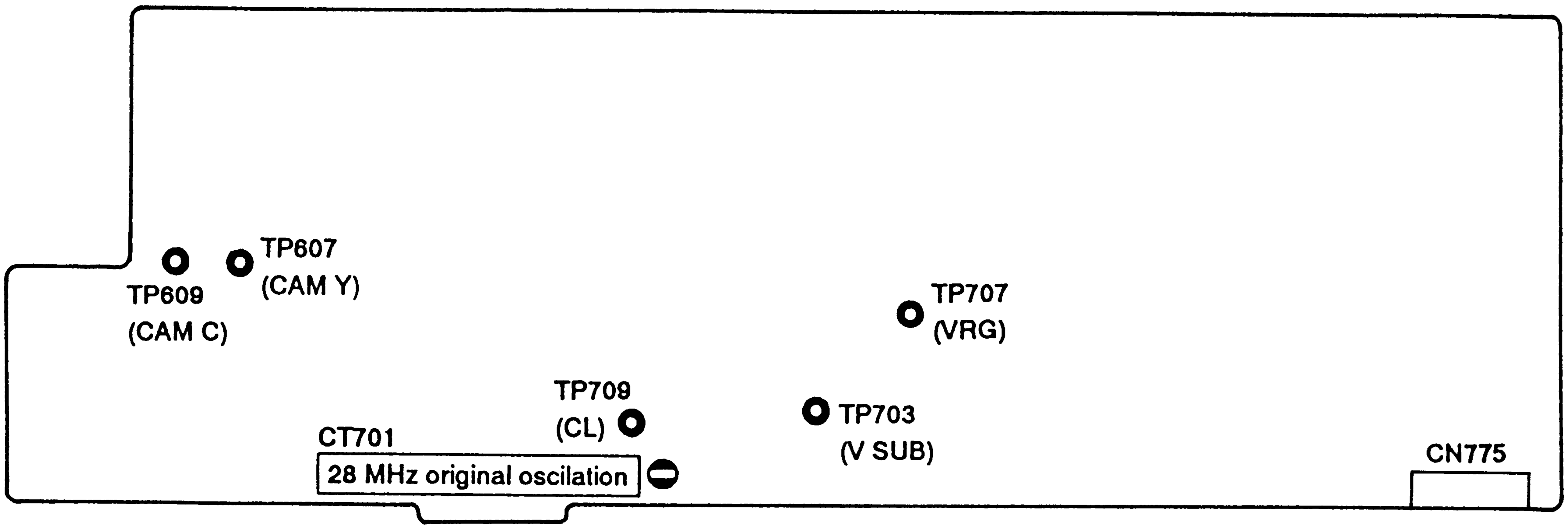


(CCD-TR73/TR76/TR93/TR560/T

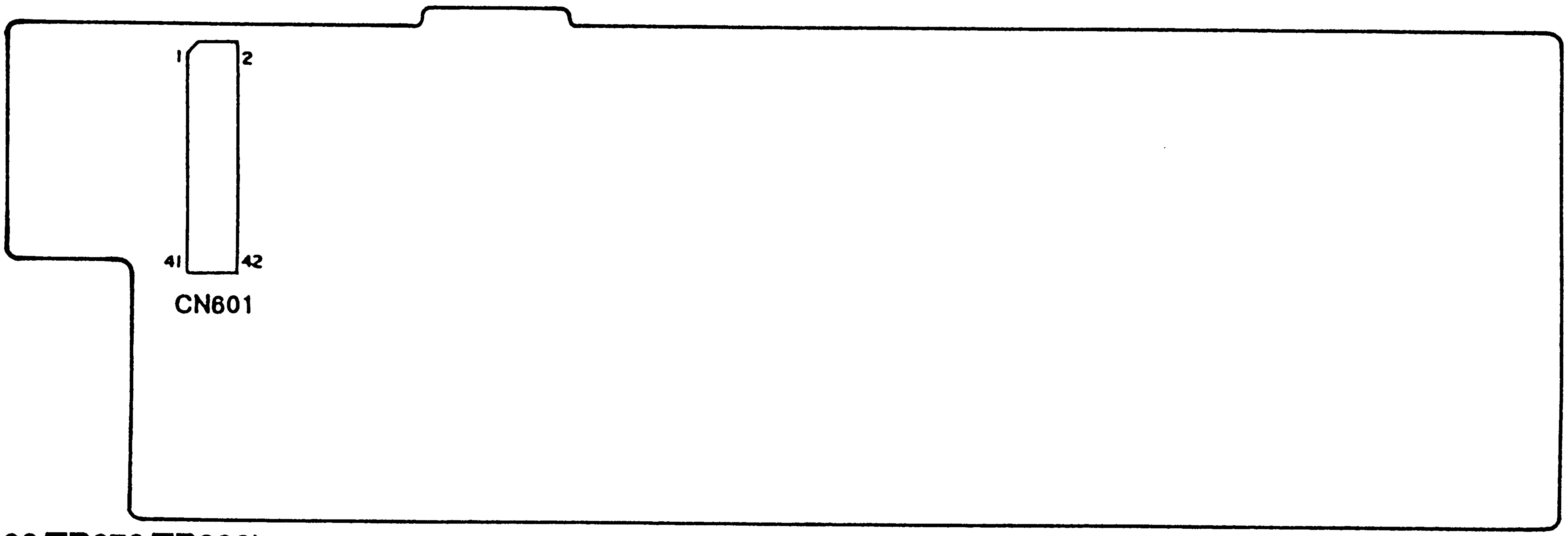
VF-72 BOARD (CONDUCTOR SIDE)



VC-161 BOARD (COMPONENT SIDE)

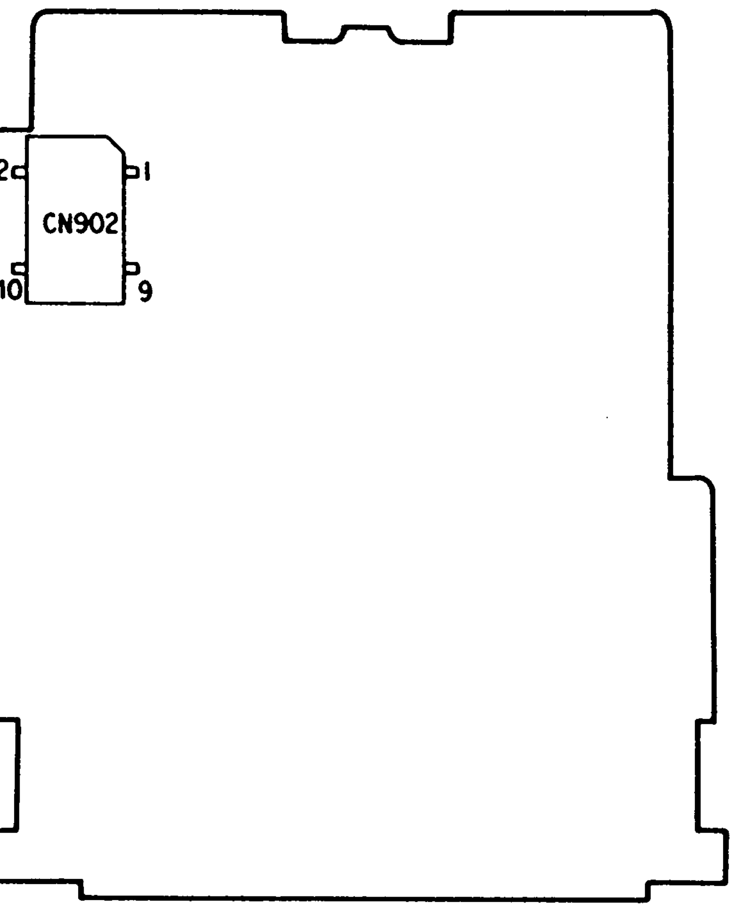


VC-161 BOARD (CONDUCTOR SIDE)

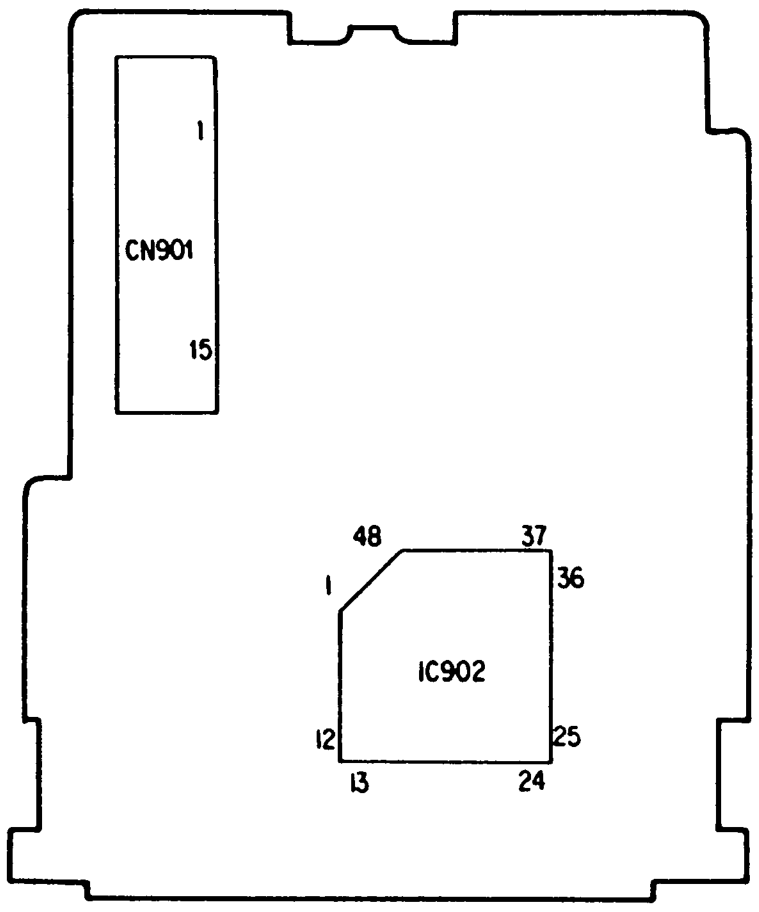


600/TR670/TR880)

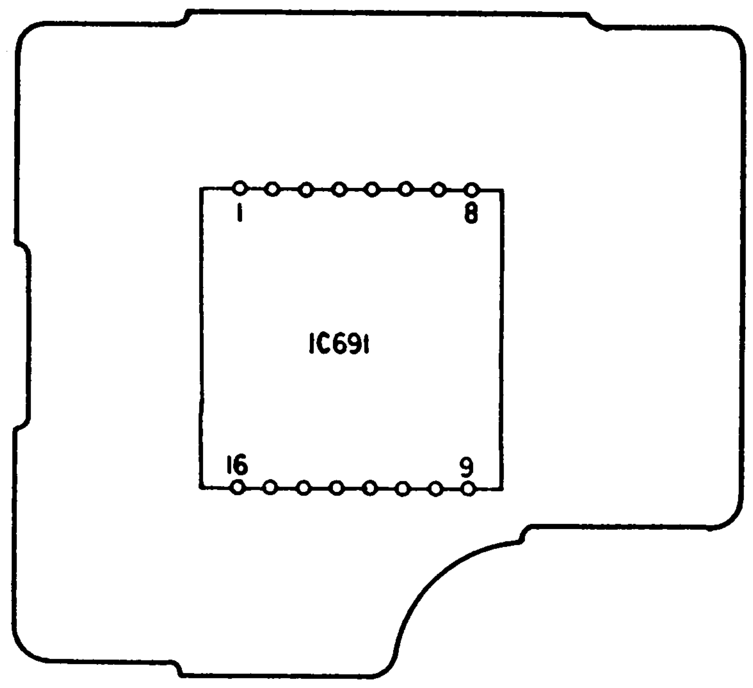
/F-73 BOARD
COMPONENT SIDE)



VF-73 BOARD
(CONDUCTOR SIDE)



CD-137 BOARD



6-2. MECHANICAL SECTION ADJUSTMENTS

Mechanism Parts Adjustments

For details on the adjustments and checks of mechanical section and replacements of mechanism parts, refer to the separate volume-"8 mm Video Mechanism Adjustment Manual IV A Mechanism".

2-1. OPERATING WITHOUT A CASSETTE

1) Refer to "2. DISASSEMBLY" and supply the power with the cabinet removed. (So that the mechanical deck can be operated.)
2) Connect the adjusting remote commander to the remote terminal.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Close the cassette compartment without loading a cassette and complete loading.
5) Set data: 01 to page: 1, address: 00.
6) Set data: 01 to page: D, address: 02, and press the PAUSE button of the adjusting remote commander.
7) Set data: 04 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.

By carrying out the above procedure, the unit can be operated without loading a cassette.

Be sure to carry out "Processing after Operations" after checking the operations.

Set the data of page: D, address: 03 to the following if the sensor ineffective mode, forced VTR power supply ON mode or forced camera power supply ON mode are to be used together.

Forced VTR power supply ON mode········· 06
Forced camera power supply ON mode······ 05

[Processing after Operations]

1) Set data: 01 to page: 1, address: 00.
2) Set data: 00 to page D, address: 02, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
4) Set data: 00 to page: 1, address: 00.
5) Disconnect the power supply of the unit.

2-2. TAPE PATH ADJUSTMENT

1. Preparations for adjustments

1) Clean the tape path face (tape guide, drum, capstan shaft, pinch roller).
2) Connect the adjusting remote commander to the remote terminal.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Select page: 1, address: 00, and set data: 01.
5) Select page: D, address: 01, and set data: 03.
   (Set the track shift mode. The adjusting remote commander can be disconnected if its PAUSE button of remote commander is pressed. In this case, be sure to perform "Processing after operations" after completing adjustments.)
6) Connect the oscilloscope.
   Channel 1-Pin ③ of CN102 of VS board
   External trigger-Pin ④ of CN102 of VS board
   (Connect the oscilloscope via the measuring pin tool for the video section (J-6082-140-A).)
7) Playback the alignment tape (WR5-1NP) for tracking.
8) Check that the RF waveform of the oscilloscope is flat at both the entrance and the exit.
   If not flat, perform necessary adjustment according to the separate 8 mm Video Mechanical Adjustment Manual IV (A Mechanism).
9) Perform "Processing after operations", after completing adjustments.

CN102 of VS board

1	PB ´CH RF
2	PB PCM RF
3	PB RF
4	RF SWP
5	RP GND
6	REC 2

〔Processing after operations〕

1) Connect the adjusting remote commander, and turn on the HOLD switch.
2) Select page: 1, address: 00, and set data: 01.
3) Select page: D, address: 02, and set data: 00.
4) Press the PAUSE button of the adjusting remote commander.
5) Remove the power supply from the unit.

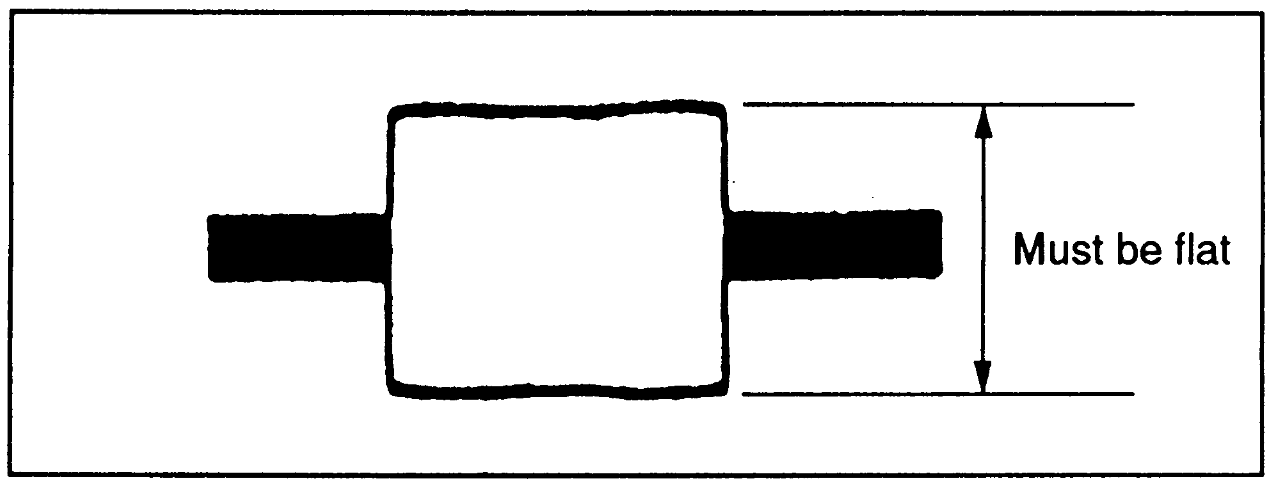


Fig. 6-2-1.

6-3. VIDEO SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 6–80.

3-1. PREPARATIONS BEFORE ADJUSTMENT

The following adjusting instruments are used for adjusting the video section.

3-1-1. Equipments to be Used

1) TV monitor
2) Oscilloscope: 2 phenomena, band 30 MHz or wider, with delay mode. (Use a 10:1 probe unless specified otherwise.)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuater
10) Regulated power supply
11) Alignment tape
    - For tracking adjustment (WR5-1NP)
      Part Code: 8-967-995-02
    - For Hi8 mode video frequency characteristics adjustment (WR5-7NE)
      Part Code: 8-967-995-13
    - For checking standard 8 mm mode operations
      For SP (WR5-5NSP)
      Part Code: 8-967-995-42
      Or (WR5-4NSP)
      Part Code: 8-967-995-41
      For LP (WR5-4NL)
      Part Code: 8-967-995-51
      For checking AFM stereo operations (WR5-9NS)
      Part Code: 8-967-995-23
      For BPF adjustment (WR5-11NS)
      Part Code: 8-967-995-71
    - For checking Hi8 mode operations (ME tape)
      For SP (WR5-8NSE)
      Part Code: 8-967-995-43
      For LP (WR5-8NLE)
      Part Code: 8-967-995-52
12) remote commander for adjustment (J-6082-053-A)
13) VC board extension cord (42P, 0.8 mm)
    Part Code: J-6082-285-A
14) Control switch block (FK board)
    extension cord (9P, 0.8 mm)
    Part Code: J-6082-288-A
15) Control switch block (CK board)
    extension cord (18P, 0.8 mm)
    Part Code: J-6082-289-A
16) AU-184 board extension cord (34P, 0.8 mm)
    Part Code: J-6082-286-A

3-1-2. Adjusting Precautions

1) The adjustment for this unit is performed using the VIDEO input (VIDEO terminal input) or the camera input. The camera input can be used for video adjustments only. Use the VIDEO input for the other adjustments.
   When using the VIDEO input, set the power supply switch to "PLAYER" or set the "forcible VTR power supply ON mode" using the adjusting remote commander. (Note 1).
   When using the camera input, set the power supply switch to "CAMERA" or set the "Forcible camera+VTR power supply ON mode" using the adjusting remote commander (Note 2).
   After completing adjustments, be sure to exit the "forcible VTR power supply ON mode" or "forcible camera+VTR power supply ON mode" (Note 3).
2) The F panel block (MA board) is not used for video adjustments. Disconnect the following connectors in these adjustments.
   1. CN1301 of the AU board
3) The view finder (VF-73 board) is not used for video adjustments. Disconnect the following connector in these adjustments.
   1. CN206 of the VS board (4P, 0.5 mm)
4) The cabinet (R) (CK board: Power supply switch, camera function switch) need not be connected if the "forcible VTR power supply ON mode" or "forcible camera+VTR power supply ON mode" is set. In this case, disconnect the following connectors.
   1. CN503 of the VS board (18P, 0.8 mm)
   2. CN101 of the ZB board (4P, 0.8 mm)
   3. CN501 of the VS board (24P, 0.8 mm)

   However, as disconnecting these connectors means disconnecting the 3V lithium power supply, data set by the user such as the date, time, and menu will be lost. After completing the adjustments, set these data again, and be sure to exit the "forcible VTR power supply ON mode" or "forcible camera+VTR power supply ON mode". (Note 3)
   When connecting the cabinet (R) using the extension cord, use the following type.
   1. J-6082-289-A (18P, 0.8 mm)

5) The lens block and VC board are not used for video adjustments. Disconnect the following connectors in these adjustments.
    1. CN203 of the VS board (42P, 0.8 mm)
    2. CN775 of the VC board (8P, 0.8 mm)
       (CCD-TR73/TR76/TR83/TR93/TR560/TR600/TR670/TR880)

   Connect the following when removing the VC board.
    1. Connect Pin ㉒ (REG H) and Pin ⑦ (D3.6V) of CN203 of the VS board with a jumper wire.

   When connecting the VC board using the extension cord, use the following type.
    1. J-6082-285-A (42P, 0.8 mm)
6) The audio board (AU board) is required only for audio adjustments. When not using it, disconnect the following connector.
    1. CN202 of the VS board

   When connecting the AU board using the extension cord, use the following type.
    1. J-6082-286-A (34P, 0.8 mm)
7) When opening the VS board, disconnect the following connectors.
    1. CN502 of the VS board (9P, 0.8 mm)

   The VTR function keys will not work. Use the remote commander to perform operations other than EJECT.
   When connecting the control switch block (FK) and CN502 of VS board using the extension cord, use the following type.
    1. J-6082-288-A (9P, 0.8 mm)

Note 1: Setting the "forcible VTR power supply ON mode (VIDEO input mode)"
1) Set data: 01 to page: 1, address: 00.
2) Set data: 02 to page: D, address: 03 and press the PAUSE button of the adjusting remote commander.

By performing the above, the VTR can be operated with the cabinet (R) removed. After completing adjustments, be sure to exit the "forcible power supply ON mode".

Note 2: Setting the "forcible camera+VTR power supply ON mode (camera input mode)"
1) Set data: 01 to page: 1, address: 00.
2) Set data: 03 to page: D, address: 03 and press the PAUSE button of the adjusting remote commander.

By performing the above, the VTR can be operated with the cabinet (R) removed. After completing adjustments, be sure to exit the "forcible power supply ON mode".

Note 3: Exiting the "forcible power supply ON mode"
1) Set data: 01 to page: 1, address: 00.
2) Set data: 00 to page: D, address: 03 and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 1, address: 00.

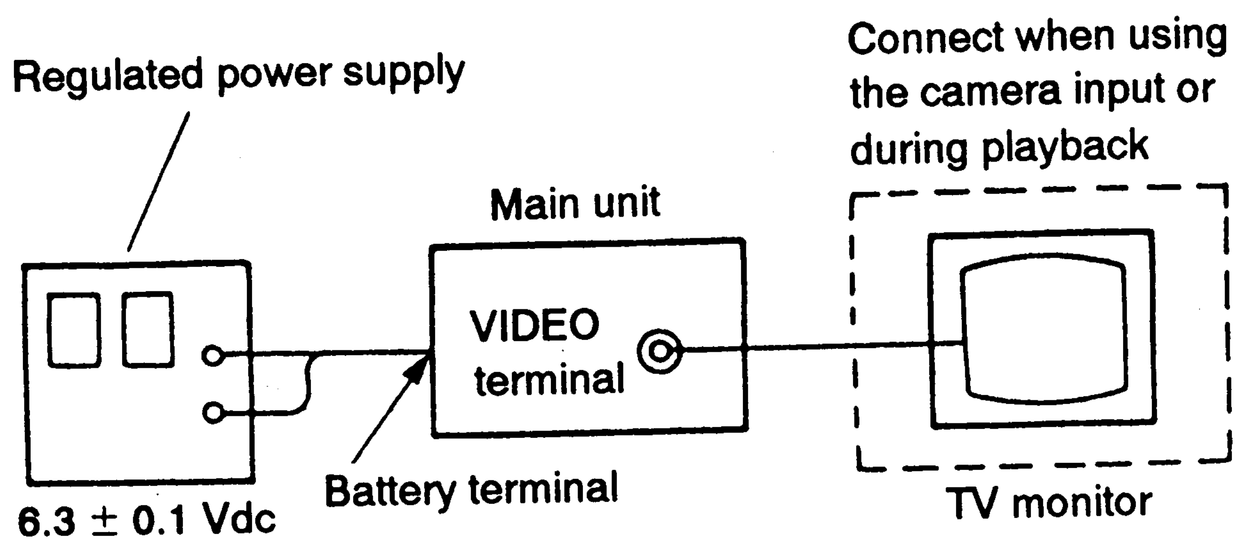
3-1-3. Connecting the Equipments

Connect the measuring instruments as shown in Fig. 6-3-1. according to the input terminal specifications (VIDEO input or CAMERA input), and perform the adjustments.
The input terminal is specified in the ( ) in the signal column. Either input terminal can be used when there are no specifications.

Note 1: If the VIDEO input is used for the adjustments which specify for the CAMERA input to be used, the product specifications of the unit may not be satisfied in some cases. Be sure to perform according to the specifications.

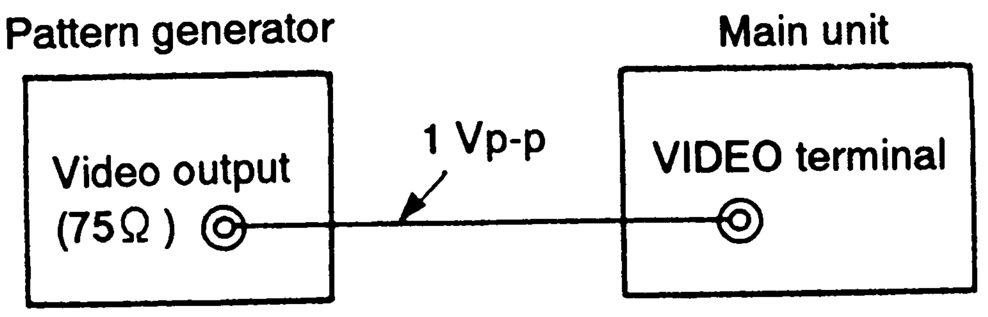
Note 2: When adjustments are performed with the S video output terminal VTR as the signal source, the efficiencies of the unit may be affected by VTR. It is recommendet that a pattern generator with a Y/C separation output terminal be used as much as possible.

Connecting the TV monitor and regulated power supply



Connecting the pattern generator

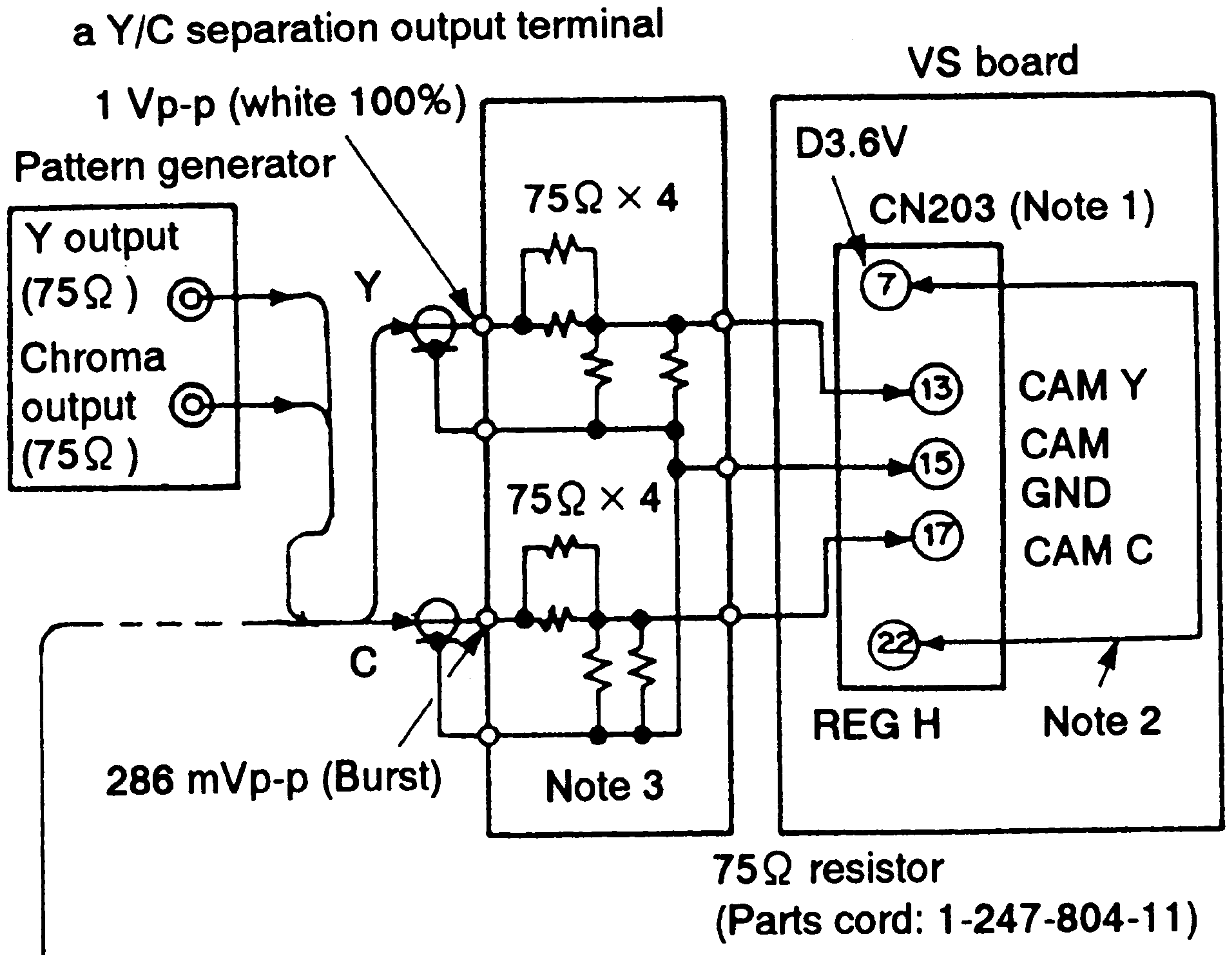
[VIDEO Input]
Set the power supply switch to "PLAYER or VTR" or set the "forcible VTR power supply ON mode" using the adjusting remote commander.



Note: The TV monitor cannot be connected. Use the view finder to monitor.

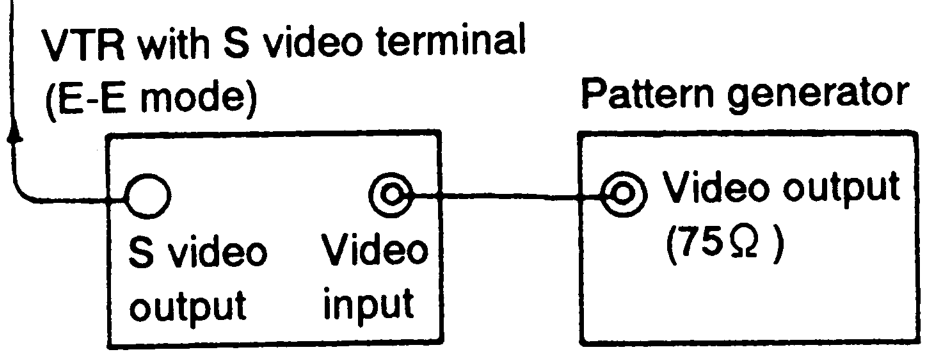
[CAMERA Input]
Set the power supply switch to "CAMERA" or set the "forcible camera+VTR power supply ON mode" using the adjusting remote commander.

- When the pattern generator has a Y/C separation output terminal



75Ω resistor
(Parts cord: 1-247-804-11)

- When the pattern generator has no Y/C separation output terminal



Note 1: Remove the VC board.
Note 2: Connect Pins ⑦ and ㉒ of CN203 with the jumper wire.
Note 3: The chroma signal input is not required for some adjustments.

Fig. 6-3-1.

3-1-4. How to Set the REC Mode in the Model without REC switch

1) REC key forbidden accept mode cancel
   1. Connect the adjusting remote commander to the remote terminal.
   2. Turn on the power.
   3. Turn on the HOLD switch of the adjusting remote commander.
   4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
   5. Select the page: D address: 17, and set the data to 12 [13].Note 1
   6. Press PAUSE button on the adjusting remote commander. (Write to the non-volatile memory)

The REC key is accepted through the above procedure.

2) REC mode setting
   1. Turn off the HOLD switch of the adjusting remote command-er.
   2. Press REC buttons of the adjusting remote commander.
   3. Perform "3. Procedure after completed the adjustment", after completing adjustment.

3) Procedure after completed the adjustment
   Be sure to return the mode to REC key forbidden accept mode after adjustment.
   1. Connect the adjusting remoter controller.
   2. Turn on the power.
   3. Turn on HOLD switch of the adjusting remote commander.
   4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
   5. Select the page: D address: 17, and set the data to 02 [03].Note 1
   6. Press PAUSE button on the adjusting remote commander. (Write to the non-volatile memory)
   7. Turn off the power.

Note 1: No mark : CCD-TR36/TR73/TR76/TR83/TR93
[ ] : CCD-TR560/TR670

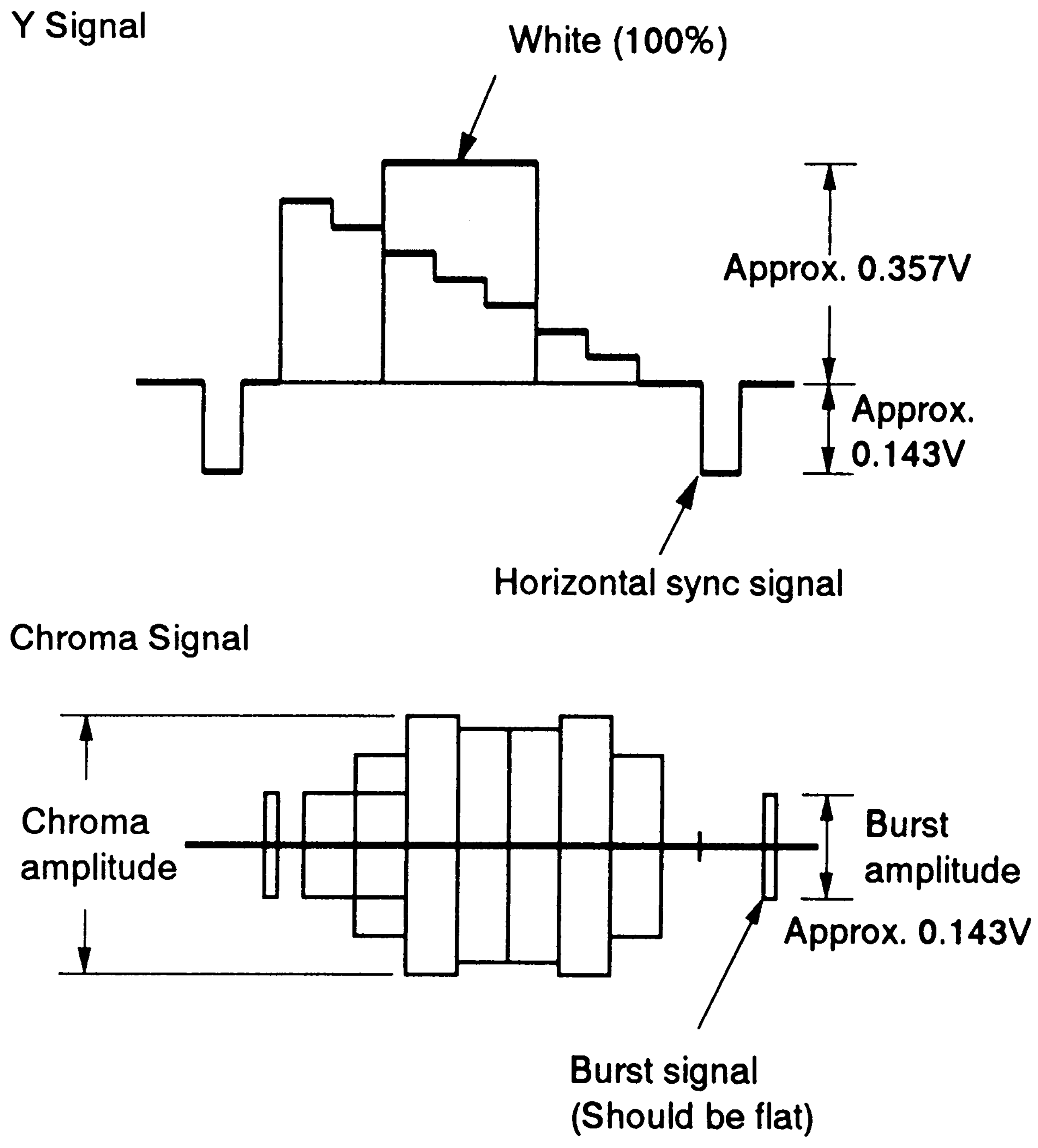
3-1-5. Checking the Input Signals

Because the video signal obtained from the pattern generator is used as the adjustment signal for adjusting the VTR section, the video output signal must satisfy the given specifications.

1. CAMERA Input

Connect the oscilloscope to Pin ⑬ of CN203 on VS board, and check that the sync signal of the Y signal is approximately 0.143 Vp-p and that the amplitude of the video section is approximately 0.357 Vp-p. (When a VTR with the S VIDEO output terminal is used, also check that the chroma signal and burst signal have not remained.) Connect the oscilloscope to Pin ⑰ of CN203 on VS board, and check that the burst signal amplitude of the chroma signal is approximately 0.143 Vp-p and flat, and that the amplitude ratio of the burst signal to the chroma signal is 0.30:0.66. The Y and chroma signals used in the adjustment are shown in Fig. 6-3-2.

Note: Be sure to check in the recording mode.



Burst amplitude: Chroma amplitude=0.30:0.66

Fig. 6-3-2. Color bar signal of pattern generator

2. VIDEO Input

Connect the oscilloscope to the video input/output terminal, and check that the sync signal amplitude of the video signal is approximately 0.286V, the amplitude of the video section is approximately 0.714V, the amplitude of the burst signal is approximately 0.286V and flat, and that the level ratio of the burst signal to the "red" signal is 0.30:0.66.

The video signal (color bar) used for adjusting the VTR section is shown in Fig. 6-3-3.

Note: Be sure to check in the record mode.

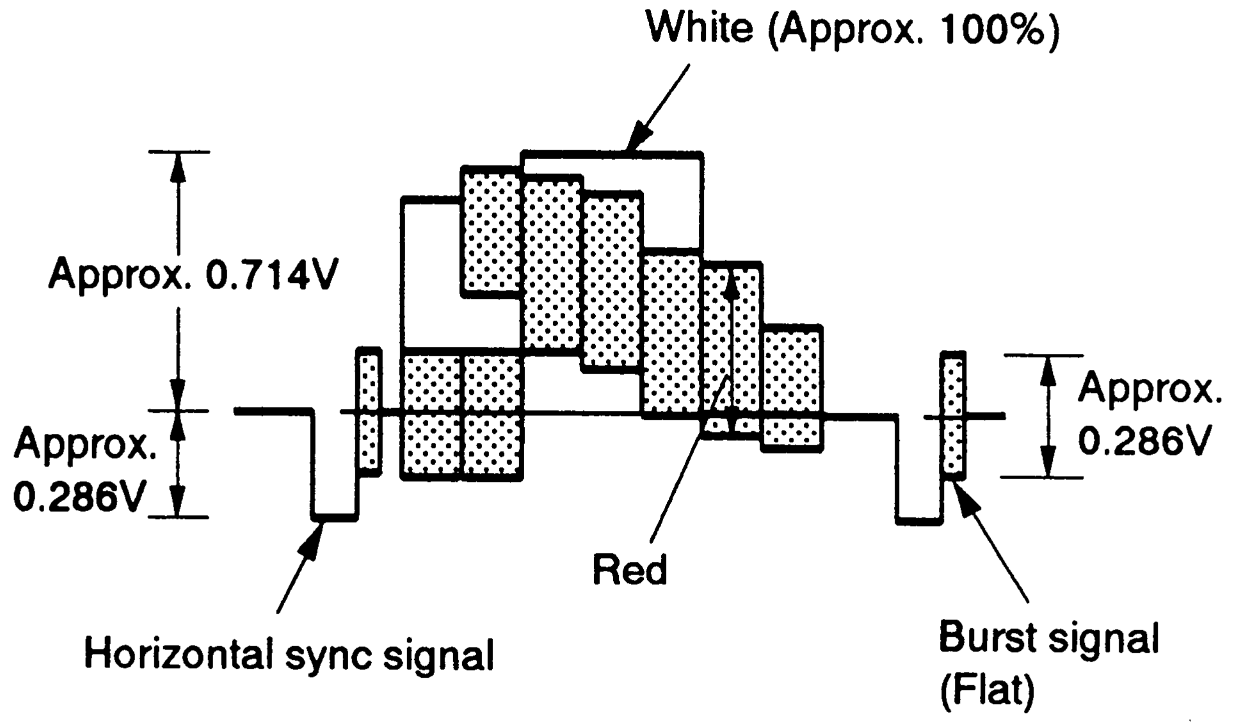


Fig. 6-3-3. Color Bar Signal of Pattern Generator

3-1-6. Alignment Tape

The following table lists alignment tapes which are available. Use the tape specified in the signal column for each adjustment.

If the type of tape to be used for checking operations is not specified, use whichever type.

Name	**Record-ing mode**	**Tape type**	**Tape speed**	**Recording contents**		**Usage**
				Video area	**PCM area**	
Tracking WR5-1NP	Standard 8 mm	MP	SP	CH2: Signal for 1 MHz tape path adjustment		Tape path adjustment Switching position adjustment
Video frequency characteristics WR5-7NE	Hi8	ME	SP	RF sweep 0 to 15 MHz Marker 2, 4.5, 7, 8.5, 10 MHz		Frequency characteristics adjustment
Video frequency characteristics WR5-2N	Standard 8 mm	MP	SP	RF sweep Marker 1, 3.58, 5.5, 7 MHz		
Operation check (SP mode) WR5-5NSP	Standard 8 mm	MP	SP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) 400 Hz 60% modulation	• Audio signal (PCM) Monoscope section 20 Hz 20 sec. 400 Hz 20 sec. 14 kHz 20 sec. } Repeated 4 times Color bar section 1 kHz 4 minutes	Checking operations
Operation check WR5-8NSE	Hi8	ME	SP		• Audio signal (PCM) 400 Hz	
Operation check WR5-4NL	Standard 8 mm	MP	LP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) 400 Hz 60% modulation		
Operation check WR5-8NLE	Hi8	ME	LP		• Audio signal (PCM) 400 Hz	
AFM stereo Operation check WR5-9NS	Standard 8 mm	MP	SP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) Stereo section (color bar) Lch: 400 Hz, Rch: 1 kHz (L+R: 1.5 MHz ± 60 kHz DEV L–R: 1.7 MHz ± 30 kHz DEV) Bilingual section (Monoscope) Main: 400 Hz (1.5 MHz ± 60 kHz DEV) Sub: 1 kHz (1.7 MHz ± 30 kHz DEV)	• Audio signal (PCM) 400 Hz 8 minutes	AFM stereo Checking operations
BPF adjustment WR5-11NS	Standard 8 mm	MP	SP	• Video signal Color bar • Audio signal Main: 1 kHz (1.5 MHz ± 100 kHz DEV) Sub: 1 kHz (1.7 MHz ± 50 kHz DEV)		BPF Adjustment

Tape type

MP	Particle type metal tape
ME	Evaporated type metal type

Table 6-3-1.

3-1-6. Alignment Tape

The following table lists alignment tapes which are available.
Use the tape specified in the signal column for each adjustment.

If the type of tape to be used for checking operations is not specified, use whichever type.

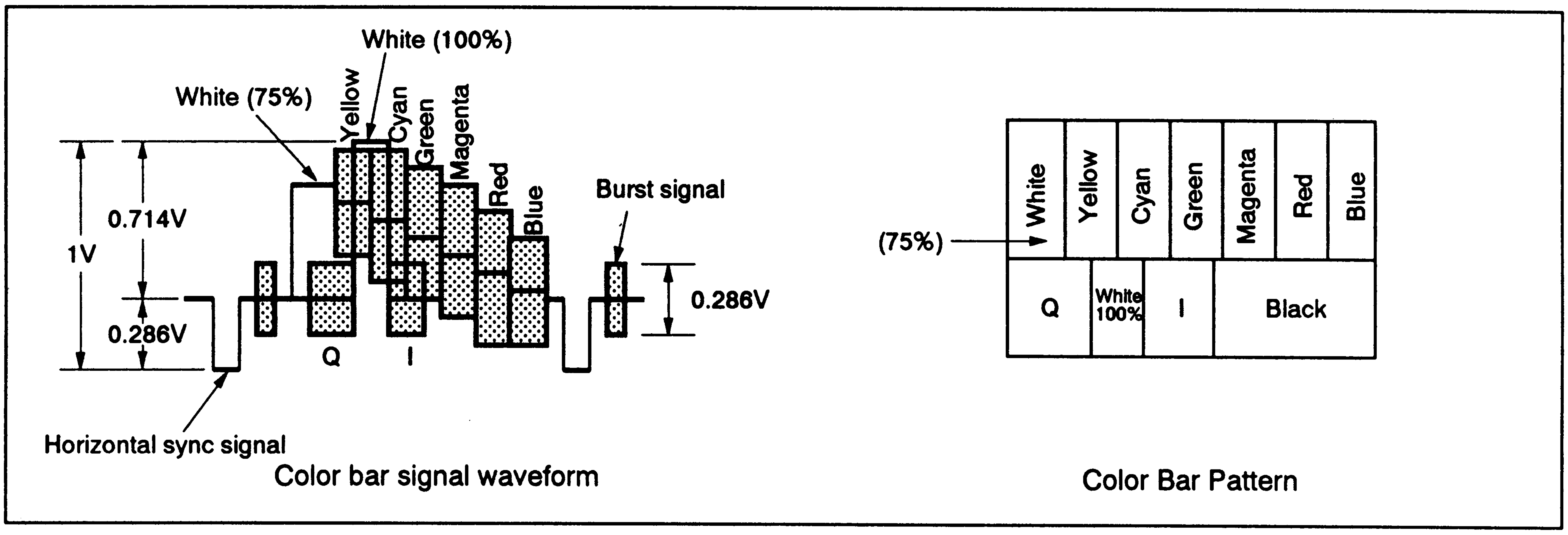
Name	Recording mode	Tape type	Tape speed	Recording contents		Usage
				Video area	PCM area	
Tracking WR5-1NP	Standard 8 mm	MP	SP	CH2: Signal for 1 MHz tape path adjustment		Tape path adjustment Switching position adjustment
Video frequency characteristics WR5-7NE	Hi8	ME	SP	RF sweep 0 to 15 MHz Marker 2, 4.5, 7, 8.5, 10 MHz		Frequency characteristics adjustment
Video frequency characteristics WR5-2N	Standard 8 mm	MP	SP	RF sweep Marker 1, 3.58, 5.5, 7 MHz		
Operation check (SP mode) WR5-5NSP	Standard 8 mm	MP	SP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) 400 Hz 60% modulation	• Audio signal (PCM) Monoscope section 20 Hz 20 sec. 400 Hz 20 sec. 14 kHz 20 sec. Repeated 4 times Color bar section 1 kHz 4 minutes	Checking operations
Operation check WR5-8NSE	Hi8	ME	SP		• Audio signal (PCM) 400 Hz	
Operation check WR5-4NL	Standard 8 mm	MP	LP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) 400 Hz 60% modulation		
Operation check WR5-8NLE	Hi8	ME	LP		• Audio signal (PCM) 400 Hz	
AFM stereo Operation check WR5-9NS	Standard 8 mm	MP	SP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) Stereo section (color bar) Lch: 400 Hz, Rch: 1 kHz (L+R: 1.5 MHz ± 60 kHz DEV L–R: 1.7 MHz ± 30 kHz DEV) Bilingual section (Monoscope) Main: 400 Hz (1.5 MHz ± 60 kHz DEV) Sub: 1 kHz (1.7 MHz ± 30 kHz DEV)	• Audio signal (PCM) 400 Hz 8 minutes	AFM stereo Checking operations
BPF adjustment WR5-11NS	Standard 8 mm	MP	SP	• Video signal Color bar • Audio signal Main: 1 kHz (1.5 MHz ± 100 kHz DEV) Sub: 1 kHz (1.7 MHz ± 50 kHz DEV)		BPF Adjustment

Tape type
MP············ Particle type metal tape
ME············ Evaporated type metal type

Table 6-3-1.

Fig. 6-3-4. shows the 75% color bar signals recorded on the alignment tape.

Note: Measure using the video output terminal (Terminated at 75 Ω)



Color bar signal waveform

Color Bar Pattern

Fig. 6-3-4. Color Bar Signals of the Alignment Tape

3-1-7. Input/Output Level and Impedance

1. CCD-TR36/TR73/TR76/TR83/TR93/TR560/TR670

Video output	Phono jack, 1 Vp-p, 75Ω , unbalanced, sync negative
Audio output	Phono jack, –7.5 dBs, (at load impedance 47 kΩ) impedance less than 2.2 kΩ

2. CCD-TR100/TR600/TR880

S video input/output	4-pin mini DIN, Luminance signal: 1 Vp-p, 75 ohms, unbalanced, sync negative Chrominance signal: 0.286 Vp-p, 75 ohms, unbalanced
Video input/output	Phono jack, 1 Vp-p, 75 ohms, unbalanced, sync negative
Audio input/output	Phono jack, Input: –7.5 dBs, input impedance more than 47 kilohms Output: –7.5 dBs, (at load impedance 47 kilohms), impedance less than 2.2 kilohms

3-1-8. Service Mode

Note: After the completion of the all adjustments, cancell the service mode by either of the following ways.

1) Unplug the main power supply and remove the lithium battery. (In this case, date and time and menu setting have been set by users are canceled. Perform resetting.)
2) Return data of the address: 00 on page: 1 to 00. And when data on page: 2 is changed, return the data to the original condition.

1. Test mode setting

Set/release each test mode. Set data: 01 to page: 1, address: 00, before setting the data.

Page D	Address 02

Data	Function
00	Normal
01	Test mode 1 Various emergency prohibitions and releases Drum, capstan, loading motor, reel, tape top and end, DEW SP/LP automatic discrimination prohibition, manual switching, 5 minutes pause release prohibition Power off prohibition/release by battery end

Page D	Address 03

Data	Function
00	Normal
01	Camera power ON
02	VTR power ON
03	Camera + VTR power ON

* For page D, the data set will be recorded in the nonvolatile memory by pressing the PAUSE button on the adjusting remote commander. Take note that, in this case, the test mode will not be released even if the main power has been turned off (6.3 Vdc).

* Be sure to return this address data to 00 after completing adjustments/repairs and press the PAUSE button of the adjusting remote commander.

2. Emergency code

Fault (error) symptoms can be checked.

Page D	Address E4

Last emergency code
……Last error code generated (This data will be renewed each time an error occurs.)

Page D	Address E8

2nd emergency code
……2nd error code generated

Page D	Address EC

First emergency code
……First error code generated

* Be sure to rewrite the data of addresses E4, E8 and EC to 00 after repairs/adjustments.

* When rewriting the data, be sure to press the PAUSE button of the remote commander after setting the data.

Code	Error Condition
00	No error
01	Loading motor error
02	Reel error during unloading
03	Reel errors at other times
04	Capstan error
05	FG error during drum start up
06	PG error during drum start up
07	FG error during normal drum conditions
08	PG error during normal drum conditions
09	Phase error during normal drum conditions

3. Emergency mode

The operation mode can be checked during faults.

Page D	Address E5

Last emergency mode

……The operation mode when the last error is generated
(This data will be renewed each time an error occurs.)

Page D	Address E9

2nd emergency mode

……The operation mode when the 2nd error is generated

Page D	Address ED

First emergency mode

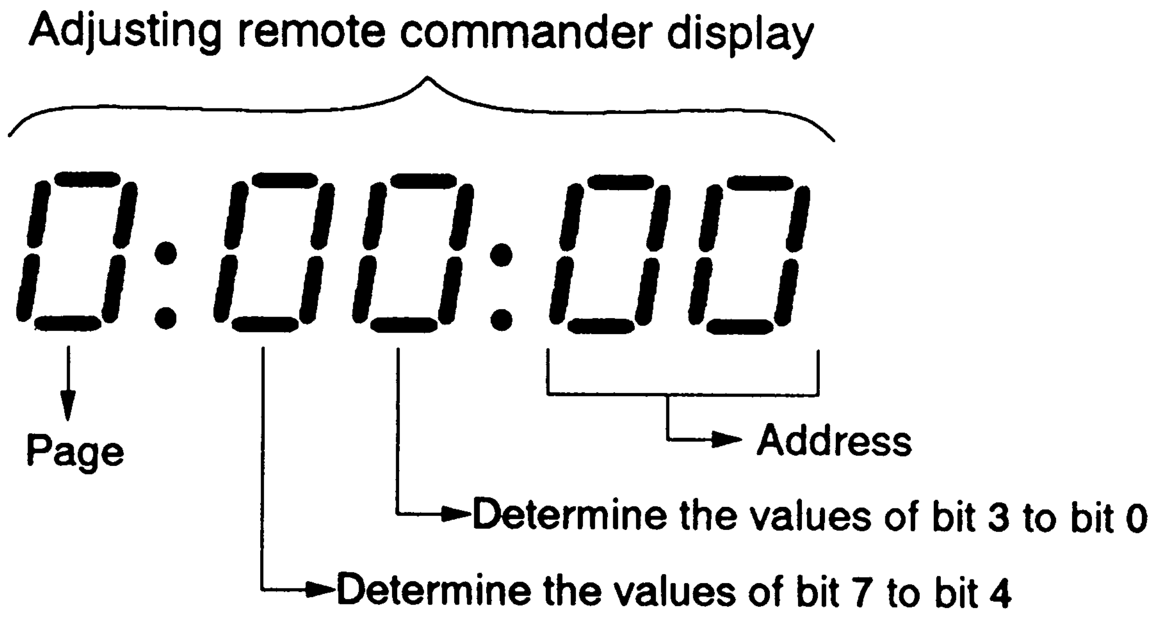
……The operation mode when the first error is generated

- * Be sure to rewrite the data of addresses E5, E9 and ED to 00 after repairs/adjustments.
- * When rewriting the data, be sure to press the PAUSE button of the adjusting remote commander after setting the data.

Code	Error Conditions
00	BEFOR INITIALIZE
01	EJECTED
02	NORMAL STOP
03	FF
04	NORMAL REC
06	NORMAL PB
07	PB PAUSE
12	LOADING
14	REC PAUSE
26	X1
27	1/5 SLOW
31	UNLOADING
46	CUE
56	REVIEW
62	STOP TAPE END
66	X2
67	FRAME
72	STOP TAPE TOP
83	REWIND
85	REC REVIEW (+)
95	REC REVIEW (–)
97	–PB PAUSE
A2	EMERGENCY LOADING
A5	EDIT SEARCH (+)
B1	EMERGENCY UNLOADING
B2	STOP EMERGENCY 1
B5	EDIT SEARCH (–)
C2	STOP EMERGENCY 2
E2	STOP NO CASSETTE
F5	EDIT PAUSE

4. Bit value discrimination

Bit values must be discriminated using the display data of the adjusting remote commander for the following items. Use the table below to discriminate if the bit value is "1" or "0".


Adjusting remote commander display
0:00:00
Page
Address
Determine the values of bit 3 to bit 0
Determine the values of bit 7 to bit 4

	Remote controller display	Bit value			
		bit 3 or bit 7	bit 2 or bit 6	bit 1 or bit 5	bit 0 or bit 4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ→	8	1	0	0	0
	9	1	0	0	1
	A(A)	1	0	1	0
	B(b)	1	0	1	1
	C(c)	1	1	0	0
	D(d)	1	1	0	1
Ⓑ→	E(E)	1	1	1	0
	F(F)	1	1	1	1

(Example) If the remote commander display data is "8E", bit values from bit7 to bit4 can be discriminated from column Ⓐ, and those from bit3 to bit0 from column Ⓑ.

5. Battery voltage check

Page 2	Address 47

Display Data	Battery Voltage
F0	Approx. 10.6 Vdc
E0	Approx. 9.9 Vdc
D0	Approx. 9.2 Vdc
C0	Approx. 8.5 Vdc
B0	Approx. 7.8 Vdc
A0	Approx. 7.1 Vdc
90	Approx. 6.4 Vdc
80	Approx. 5.7 Vdc
70	Approx. 5.0 Vdc

Using method:

Order	Page	Address	Data	Procedure
1	2	00	01	Preparation
2	2	47		The battery voltage can be discriminated by the display data.

* Voltage measurement accuracy is approx. ± 10%.

6. Mechanism controller input/output check

Page 2	Address 83

Bit	IN/OUT Signal	Condition
0		
1	E/L DET	"1"=Hi8, "0"=Normal
2	SP/LP DET	"1"=SP, "0"=LP
3	CLOG DET	"1"=Clog detected, "0"=Others
4	REC PROOF	"1"=Recording prohibited, "0"=Recording possible
5	TAPE PREEND	"1"=Tape preend, "0"=Others
6	DEW DET	"0"=Condensation occured, "1"=Others
7	CASSETTE IN	"0"=No cassette

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Preparation
2	2	83		The condition of each input signal can be discriminated by differentiating the bit value of the display data.

Page 2	Address 84

Bit	IN/OUT Signal	Condition
0	VA PB MODE	"1"=PB, "0"=REC
1	RP PB MODE	"1"=PB, "0"=REC
2	JOG	"1"=Variable speed playback, "0"=Others
3	ME/MP SW	"1"=ME tape, "0"=Other tape
4	Hi8 MP SW	"1"=Hi8 MP tape, "0"=Other tape
5	SERVO OPERATION	"1"=SP mode, "0"=LP mode
6	VIDEO MUTE	"1"=Mute, "0"=Video output
7	AUDIO MUTE	"1"=Mute, "0"=Audio output

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Preparation
2	2	84		The condition of each signal can be discriminated by differentiating the bit value of the display data.

7. Mode switch and CC DOWN switch check

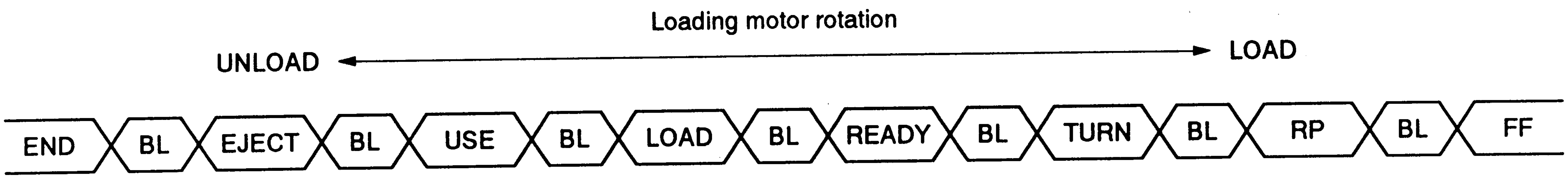
The mode switch position (mechanical section condition) can be checked.

Page 3	Address E9

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
MSW 2	MSW 1	MSW 0	CC DOWN				

				DATA	POSITION	FUNCTION
0	0	0	0/1	E＊/F＊	BL	Interval of each position
0	1	1	1	7＊	END	FULL END processing (T side lock removal)
0	0	1	1	3＊	EJECT	Cassette compartment ejection
1	0	1	1	B＊	USE	EJECTED (Unskate end)
0	0	1	0	2＊	LOAD	LOADING (Skate in)
1	0	0	0	8＊	READY	NORMAL STOP position
1	1	0	0	C＊	TURN	OFF of pinch roller only with STOP↔FF/REW (oscillating position)
0	1	0	0	4＊	RP	PB, REC, RVS, REV, CUE
0	0	0	0	0＊	FF	FF/REW

＊: Don't care



Using method:

Order	Page	Address	Data	Procedure
1	3	00	00	Preparation
2	3	E9		The mode switch position and CC DOWN switch condition can be discriminated by the display data.

8. Tape top/end sensor check

Page 3	Address 0A

Display Data	Tape Top/End Sensor Condition
00	Tape present (Middle of tape)
01	Tape end
10	Tape top
11	No tape

Tape end sensor condition
Tape top sensor condition

"0"=Non active (Not receiving light)
"1"=Active (Receiving light)

Using method:

Order	Page	Address	Data	Procedure
1	3	00	02	Preparation
2	3	0E	10	Preparation
3	3	0A		The condition of the tape top/end sensor can be discriminated by the display data.

9. Version of mechanical control microprocessor

Page 3	Address 0B

Display Data	Microprocessor version
01	Version 1

Using method:

Order	Page	Address	Data	Procedure
1	3	00	02	Preparation
2	3	0B		The microprocessor version can be discriminated by the display data.

10. Mode switch and CC DOWN switch check

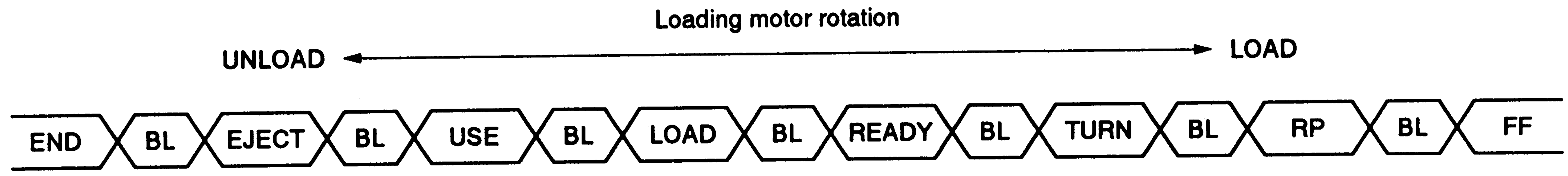
The mode switch position (mechanical section condition) can be checked.

Page 3	Category 00	Address E9

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
MSW 2	MSW 1	MSW 0	CC DOWN				

				DATA	POSITION	FUNCTION
0	0	0	0/1	E*/F*	BL	Interval of each position
0	1	1	1	7*	END	FULL END processing (T side lock removal)
0	0	1	1	3*	EJECT	Cassette compartment ejection
1	0	1	1	B*	USE	EJECTED (Unskate end)
0	0	1	0	2*	LOAD	LOADING (Skate in)
1	0	0	0	8*	READY	NORMAL STOP position
1	1	0	0	C*	TURN	OFF of pinch roller only with STOP↔FF/REW (oscillating position)
0	1	0	0	4*	RP	PB, REC, RVS, REV, CUE
0	0	0	0	0*	FF	FF/REW

*: Don't care



Using method:

Order	Page	Address	Data	Procedure
1	3	00	00	Specification of category 00
2	3	E9		The mode switch position and CC DOWN switch condition can be discriminated by the display data.

11. Tape top/end sensor check

Page 3	Category 02	Address 0A

Display Data	Tape Top/End Sensor Condition
00	Tape present (Middle of tape)
01	Tape end
10	Tape top
11	No tape

Tape end sensor condition
Tape top sensor condition

"0"=Non active (Not receiving light)
"1"=Active (Receiving light)

Using method:

Order	Page	Address	Data	Procedure
1	3	00	02	Specification of category 02
2	3	0E	10	Request for tape top/end sampling operations
3	3	0A		The condition of the tape top/end sensor can be discriminated by the display data.

12. Version of mechanical control microprocessor

Page 3	Category 02	Address 0B

Display Data	Microprocessor version
01	Version 1

Using method:

Order	Page	Address	Data	Procedure
1	3	00	02	Specification of category 02
2	3	0B		The microprocessor version can be discriminated by the display data.

13. Page D address list for standard 8 mm model

Note 1: The adjustment data initial value is the data input before performing video section adjustments (Page D) if the Page D data has been erased due to some reason.

Note 2: The data written in the adjustment data memo column are fixed.
After adjusting, check that these data have not been rewritten by mistake.

Note 3: In some case, data have been input to the page D address 91 to AF, BC to D3 and F0 to FF. This has no relation to the adjustment.

Note 4: No mark : CCD-TR36/TR73/TR76/TR83/TR93/
TR560/TR670
*1 : 02 (CCD-TR36/TR73/TR76/TR83/TR93)
03 (CCD-TR560/TR670)
*2 : 00 (CCD-TR36/TR73/TR76/TR560)
60 (CCD-TR83/TR93/TR670)
*3 : 20 (CCD-TR36)
28 (CCD-TR73/TR76/TR560)
60 (CCD-TR83)
68 (CCD-TR93)
69 (CCD-TR670)
*4 : 00 (CCD-TR73)
80 (CCD-TR36/TR76/TR83/TR93/TR560/TR670)
*5 : 00 (CCD-TR36/TR73/TR76/TR83/TR93)
05 (CCD-TR560)
46 (CCD-TR670)
*6 : 36 (CCD-TR36)
60 (CCD-TR560)
70 (CCD-TR670)
73 (CCD-TR73)
76 (CCD-TR76)
83 (CCD-TR83)
93 (CCD-TR93)
*7 : 1D (CCD-TR36/TR73/TR76/TR560)
25 (CCD-TR83/TR93/TR670)
*8 : 00 (CCD-TR36/TR73/TR76/TR560)
08 (CCD-TR83/TR93/TR670)
*9 : EXCEPT CCD-TR36/TR38

Address	Adjustment data	
	Initial value	Memo column
00		
01		
02	00	00
03	00	00
04	80	
05	0B	
06	66	
07	7F	
08	84	
09	8A	
0A	8E	
0B	00	00
0C		
0D		
0E		
0F		
10	00	00
11	00	00
12	00	00
13	00	00
14	93	93
15	75	75
16	61	61
17	*1	*1
18	*2	*2
19	00	00
1A	DC	DC
1B	*3	*3
1C	*4	*4
1D	01	01
1E	*5	*5
1F	*6	*6
20	*7	*7
21	*8	*8
22	29	29
23	00	00
24	00	00
25	00	00
26	14	14
27	14	14
28	64	64
29	64	64
2A	6E	6E
2B	6E	6E

Table 6-3-2. (1)

Address	Adjustment data	
	Initial value	Memo column
2C	64	64
2D	64	64
2E	6E	6E
2F	6E	6E
30	DC	DC
31	DC	DC
32	DC	
33	DC	
34	DC	
35	DC	
36	DC	
37	DC	
38	DD	
39	D4	
3A	DD	
3B	D4	
3C		
3D		
3E		
3F		
40		
41		
42	A4	
43	A4	
44		
45		
46	A4	
47	A4	
48		
49		
4A		
4B		
4C		
4D		
4E		
4F		
50	A2	A2
51	A1	A1
52		
53		
54	00	00
55	00	00
56	90	90
57	00	00

Table 6-3-2. (2)

Address	Adjustment data	
	Initial value	Memo column
58	00	00
59	75	75
5A	E3	E3
5B	E3	E3
5C	E3	E3
5D	E3	E3
5E	E3	
5F	DF	DF
60	DF	DF
61	DF	DF
62	DF	DF
63	DF	
64		
65		
66		
67		
68		
69	E6	E6
6A	E6	E6
6B	E6	E6
6C	E6	E6
6D	E6	E6
6E		
6F		
70	7A	
71	87	
72	B0	B0
73	B0	B0
74		
75	C0	
76		
77	8F	
78	00	00
79	00	00
7A	86	86
7B	86	86
7C	00	00
7D	00	00
7E	00	00
7F	00	00
80	A4	
81	A4	
82	B1	
83	B0	

Table 6-3-2. (3)

Address	Adjustment data	
	Initial value	Memo column
84	43	
85	66	66
86	00	00
87	66	
88	B5	B5
89	B5	B5
8A	00	00
8B	48	48
8C	AF	AF
8D	88	
8E	77	
8F	55	
90	60	60
91 to AF		
B0*9	A0	
B1*9	AE	AE
B2*9	95	95
B3*9	7A	
B4*9	6A	
B5*9	70	
B6*9	90	
B7*9	35	
B8*9	7A	7A
B9*9	7A	7A
BA*9	70	70
BB*9	F0	F0
BC to E3		
E4	00	
E5	00	
E6	00	
E7	00	
E8	00	
E9	00	
EA	00	
EB	00	
EC	00	
ED	00	
EE	00	
EF	00	
F0	34	
F1 to FF		

Table 6-3-2. (4)

14. Page D address list for Hi8 model (CCD-TR100/TR600/TR880)

Note 1: The adjustment data initial value is the data input before performing video section adjustments (Page D) if the Page D data has been erased due to some reason.

Note 2: The data written in the adjustment data memo column are fixed.
After adjusting, check that these data have not been rewritten by mistake.

Note 3: In some case, data have been input to the page D address 91 to AF and F0 to FF. This has no relation to the adjustment.

Note 4: No mark : CCD-TR100/TR600/TR880
( ) : CCD-TR600/TR880
*1 : 12 (CCD-TR100/TR600)
13 (CCD-TR880)
*2 : C8 (CCD-TR100)
E8 (CCD-TR600/TR880)
*3 : 20 (CCD-TR100)
68 (CCD-TR600)
69 (CCD-TR880)
*4 : 01 (CCD-TR100)
06 (CCD-TR600)
48 (CCD-TR880)
*5 : 00 (CCD-TR100/TR600)
80 (CCD-TR880)
*6 : 18 (CCD-TR100)
25 (CCD-TR600/TR880)
*7 : 00 (CCD-TR100)
08 (CCD-TR600/TR880)

Address	Adjustment data	
	Initial value	Memo column
00		
01		
02	00	00
03	00	00
04	80	
05	0B	
06	66	
07	7F	
08	84	
09	8A	
0A	8E	
0B	00	00
0C		
0D		
0E		
0F		
10	00	00
11	00	00
12	00	00
13	00	00
14	93	93
15	75	75
16	61	61
17	*1	*1
18	*2	*2
19	00	00
1A	DC	DC
1B	*3	*3
1C	80	80
1D	01	01
1E	*4	*4
1F	*5	*5
20	*6	*6
21	*7	*7
22	00	29
23	29	03
24	03	30
25	30	00
26	00	28
27	28	28
28	28	E8
29	E8	E8

Table 6-3-3. (1)

Address	Adjustment data	
	Initial value	Memo column
2A	DC	DC
2B	EF	EF
2C	E8	E8
2D	E8	E8
2E	DC	DC
2F	EF	EF
30	E5	
31	E5	
32	E5	
33	E5	
34	E5	
35	E5	
36	E5	
37	E5	
38	C4	
39	DE	
3A	C4	
3B	DE	
3C		
3D		
3E		
3F		
40	D3	
41	D8	
42	D7	
43	D0	
44	D3	
45	D8	
46	D7	
47	D0	
48		
49		
4A		
4B		
4C		
4D		
4E		
4F		
50	D3	D3
51	CE	CE
52		
53		
54	C2	C2
55	C2	C2
56	97	97

Table 6-3-3. (2)

Address	Adjustment data	
	Initial value	Memo column
57	70	70
58	70	70
59	85	85
5A	DF	
5B	DF	
5C	DF	
5D	DF	
5E	DF	
5F	D7	
60	D7	
61	D7	
62	D7	
63	D7	
64		
65		
66		
67		
68		
69	DC	DC
6A	DC	DC
6B	DC	DC
6C	DC	DC
6D	DC	DC
6E		
6F		
70	88	
71	84	
72	B0	B0
73	B0	B0
74	C3	
75	BD	
76	A0	
77	9F	
78	60	60
79	58	58
7A	80	80
7B	80	80
7C	00	00
7D	00	00
7E	00	00
7F	00	00
80	A3	
81	A3	
82	A1	
83	A1	

Table 6-3-3. (3)

《 》: CCD-TR880
〈 〉: CCD-TR100/TR600
[ ] : CCD-TR100
(( )): CCD-600/TR880

Address	Adjustment data	
	Initial value	Memo column
84	4E	
85	A0	A0
86	A5	
87	94	
88	00	00
89	00	00
8A	00	00
8B	48	48
8C	AF	AF
8D	88	
8E	77	
8F	55	
90	60	60
91 to AF		
B0	(A0)	
B1	(AE)	(AE)
B2	(95)	(95)
B3	(7A)	
B4	(6A)	
B5	(70)	
B6	(90)	
B7	(35)	
B8	(7A)	(7A)
B9	(7A)	(7A)
BA	(70)	(70)
BB	(F0)	(F0)
BC to E3		
E4	00	
E5	00	
E6	00	
E7	00	
E8	00	
E9	00	
EA	00	
EB	00	
EC	00	
ED	00	
EE	00	
EF	00	
F0	((44))	
	[40]	
F1	〈E3〉	
	《E4》	
F2 to FF		

Table 6-3-3. (4)

3-2. POWER SYSTEM ADJUSTMENTS

1. Oscillator Frequency Check (DD board)

Mode	Camera record
Subject	Arbitrary
Measurement Point	Q905 collector
Measuring Instrument	Frequency counter
Specified Value	500 ± 50 kHz

Adjusting method:

1) Check that the oscillator frequency satisfies the specified value.

2. Power Voltage Check (DD board)

Mode	Camera record
Subject	Arbitrary
Measuring Instrument	Digital voltmeter
D5V check	
Measurement Point	Pin ㉙ of CN901
Specified Value	4.9 ± 0.1 Vdc
EVF5V check	
Measurement Point	Pin ㊴ of CN901
Specified Value	4.9 ± 0.1 Vdc
VID 5V check	
Measurement Point	Pins ㉓ and ㉔ of CN901
Specified Value	4.9 ± 0.1 Vdc
AU 5V check	
Measurement Point	Pin ㉟ of CN901
Specified Value	4.9 ± 0.1 Vdc
RP 5V check	
Measurement Point	Pin ⑳ of CN901
Specified Value	4.9 ± 0.1 Vdc
CAM5V check	
Measurement Point	Pins ㉕ and ㉖ of CN901
Specified Value	4.85 ± 0.1 Vdc
SS 3.6V check	
Measurement Point	Pin ㉝ of CN901
Specified Value	3.6 ± 0.1 Vdc
D3.6V check	
Measurement Point	Pins ㉑ and ㉒ of CN901
Specified Value	3.6 ± 0.1 Vdc
CAM 15V check	
Measurement Point	Pin ㉗ of CN901
Specified Value	15 ± 0.3 Vdc
CAM –8.5V check	
Measurement Point	Pin ㉛ of CN901
Specified Value	$-8.5^{+0.25}_{-0.4}$ Vdc
MT 5V check	
Measurement Point	Pins ⑨, ⑱ and ⑲ of CN901
Specified Value	5.0 ± 0.1 Vdc

3-3. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Page D Initial Value Input

If the page D data has been erased due to some cause, input the page D initial value before performing adjustments. For details on the initial value, refer to “Page D address list” in “3-1-8. Service Mode”.

Mode	E-E
Signal	Arbitrary
Adjustment Page	D
Adjustment Address	00 to 90, [A4 to AF], E4 to EF

[ ] : EXCEPT CCD-TR36/TR83/TR100

Input method:

1) Set data: 01 to page: 1, address: 00.
2) Select page D, and input the initial value to each address. (After setting the data (initial value), be sure to press the PAUSE button of the adjusting remote commander before changing the address.)

2. Battery End Adjustment

Set the battery end voltage.
If the voltage is incorrect, the life of the battery will shorten.
The image at the battery end will also be rough.

Mode	Camera record
Signal	Arbitrary
Measurement Point	LCD display of the adjusting remote control unit
Measuring Instrument	
Adjustment Page	D
Specified Value	06, 07, 08, 09, 0A

Connection:

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 6-3-5.

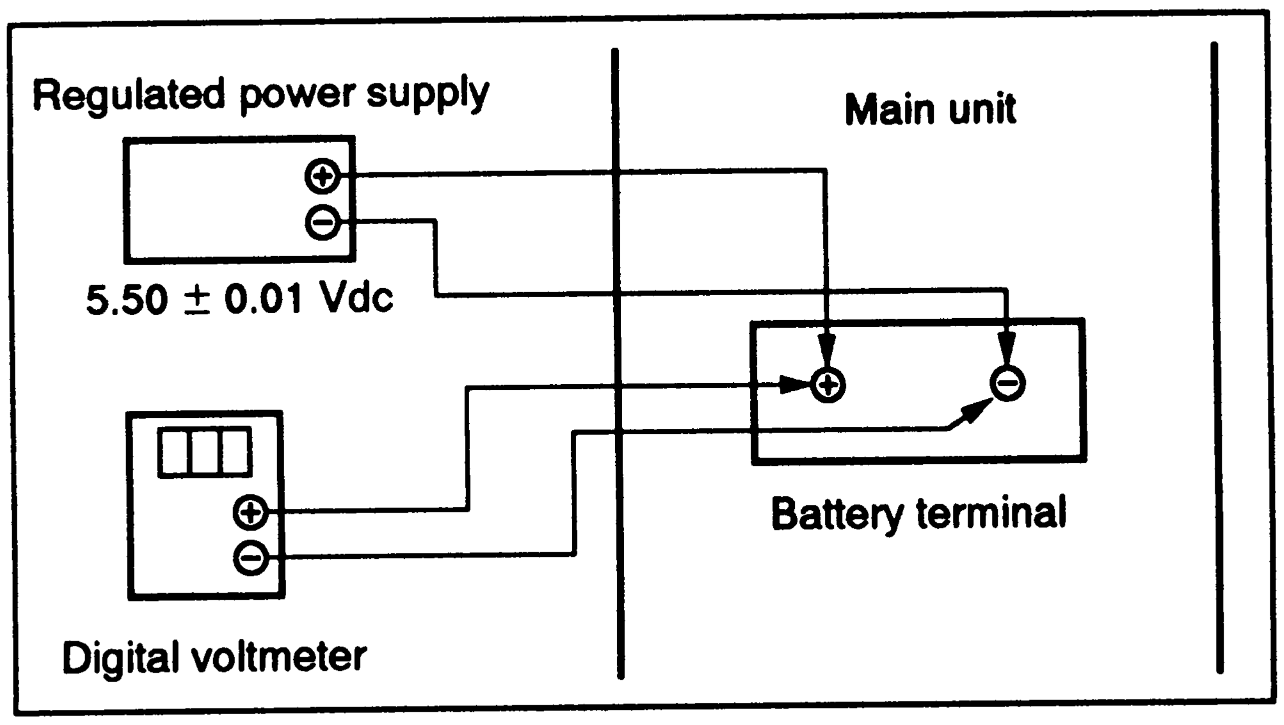


Fig. 6-3-5.

Adjusting method:

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 6.3 ± 0.1 Vdc.
2) Set data: 01 to page: 1, address: 00.
3) Decrease the output voltage of the regulated power supply so that the digital voltmeter display is 5.50 ± 0.01 Vdc.
4) Set data: 01 to page: 2, address: 00.
5) Select page: 2, address: 47, read the adjusting remote commander display data, and this data is named D6.
6) Set data D6 to page: D, address: 06, and press the PAUSE button of the adjusting remote commander.
7) Convert D47 to decimal notation, and obtain D47′. (Refer to Table 6-1-3. "Hexadecimal notation–decimal notation conversion table")
8) Calculate D7′, D8′, D9′ and DA′ using following equations (decimal notation calculation).

   D7′=D47′+3
   D8′=D47′+8
   D9′=D47′+14
   DA′=D47′+18

9) Convert D7′, D8′, D9′ and DA′ to hexadecimal notation, and obtain D7, D8, D9 and DA.
10) Set data: D7′ to page: D, address: 07, and press the PAUSE button of the adjusting remote commander.
11) Set data: D8′ to page: D, address: 08, and press the PAUSE button.
12) Set data: D9′ to page: D, address: 09, and press the PAUSE button.
13) Set data: DA to page: D, address: 0A, and press the PAUSE button.
14) Perform "Battery Down Check".

3. Battery Down Check

Mode	Camera record
Subject	Arbitrary

Connection

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 6-3-5.

Checking method:

Remove the adjusting remote commander, and perform the following check. If the check is not satisfied, perform from the beginning again.

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display becomes 6.3 ± 0.1 Vdc.
2) Set to the camera recording mode.
3) Check that the 🔋 mark on the EVF (viewfinder) display is not lighted up. (TALLY lamp lights up).
4) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.54 ± 0.01 Vdc.
5) Check that the 🔋 mark on the EVF display and the TALLY lamp blinks every second.
6) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.42 ± 0.01 Vdc.
7) Check that the 🔋 mark on the EVF display and the TALLY lamp are blinking faster, the VTR stops and the power supply turns off.

3-4. SERVO SYSTEM ADJUSTMENTS

1. Switching Position Adjustment (VS board)

Switching timing of video head setting. If deviated in this case causes switching noise or jitter on the played back screen.

Mode	Playback
Signal	Alignment tape: For tracking adjustment (WR5-1NP)
Measurement Point	CH1: Pin ④ of CN101 (RF SWP) CH2: Pin ③ of CN101 (PB RF)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	04, 05
Specified Value	t1=0 ± 10 μsec

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Set data: 0B to page: D, address: 05.
3) Change the data of page: D, address: 05 and minimize "t1". (Coarse adjustment)
4) Change the data of page: D, address: 04, and adjust so that the switching position (t1) becomes the specified value. (Fine adjustment)
5) Press the PAUSE button of the adjusting remote commander.

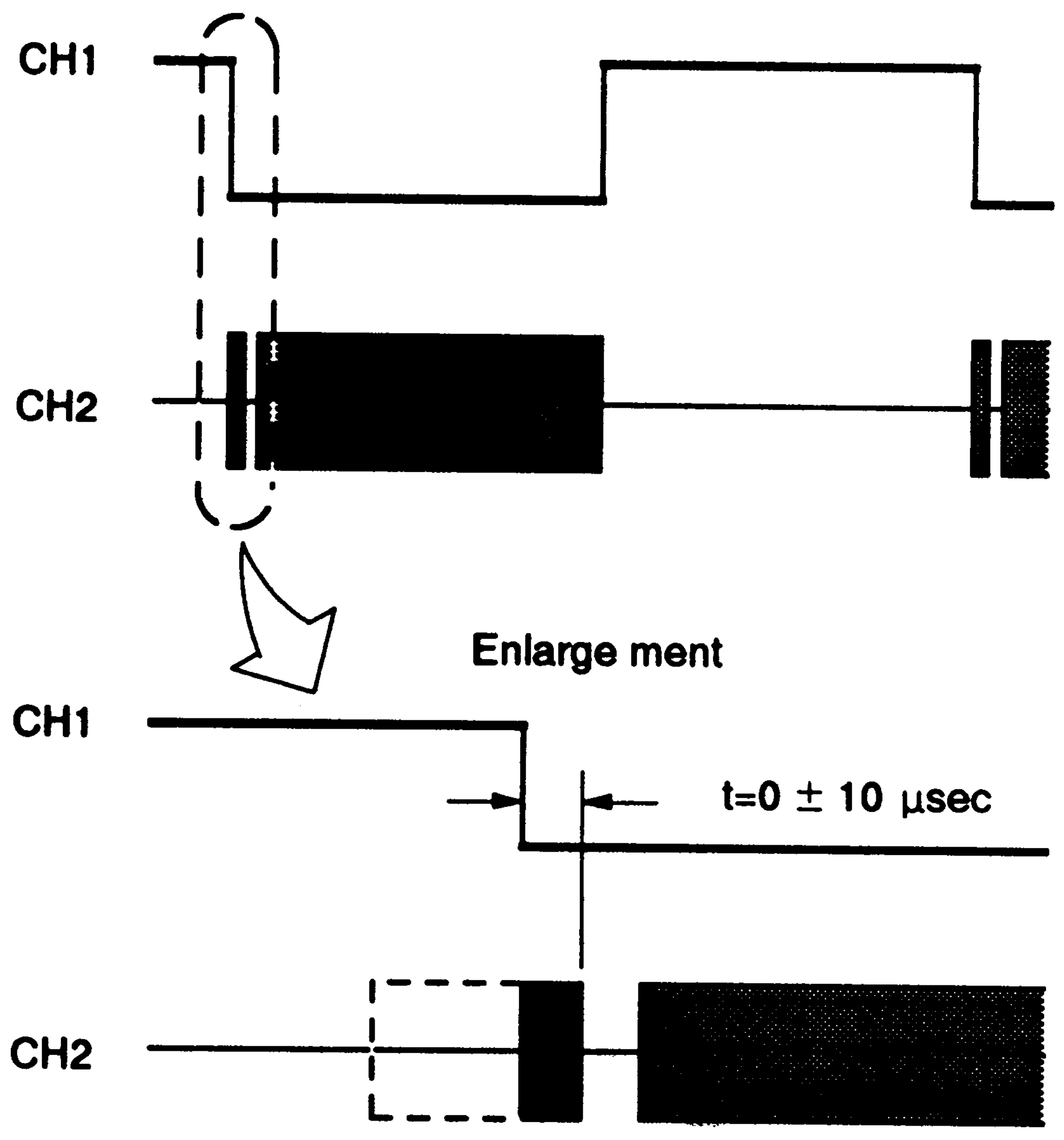


Fig. 6-3-6,

3-5. Standard 8 mm VIDEO SYSTEM ADJUSTMENTS (CCD-TR36/TR73/TR76/TR83/TR93/TR580/TR560/TR670)

The adjustments of the video system must be performed according to the following adjustment procedure.
The color video signal supplied from the pattern generator is used as the video input signal for adjusting the video system in recording mode. Check that the sync signal and the color burst signal satisfy the specification specified during the adjustment set-up shown in Figs. 6-3-2. and 6-3-3.

[Adjusting procedure]

1) Playback frequency characteristics adjustment
2) Flying erase check
3) VXO oscillation frequency check
4) SYNC AGC level adjustment
5) Comb filter adjustment
6) Emphasis input level adjustment
7) WHITE CLIP check
8) DARK CLIP check
9) DE EMPH level adjustment
10) PB Y out level adjustment
11) Y FM carrier frequency adjustment
12) Y FM deviation adjustment
13) Chroma emphasis adjustment 1
14) Chroma emphasis adjustment 2
15) Comb filter fine adjustment
16) REC Y level adjustment
17) REC L adjustment
18) REC CHROMA level adjustment
19) REC ATF level check

1. Playback Frequency Characteristic Adjustment (VS board)

Eliminate the differences in the head characteristics of each channel. If there are differences, flickers and over modulation noises will be produced.

Note 1: The adjusting element for CH2 is shown in parentheses [ ].

Mode	Playback
Signal	Alignment tape: For frequency characteristic adjustment (WR5-6N)
Measurement Point	CH1: Pin ③ of CN102 (PB RF) EXT TRIG: Pin ④ of CN102 (RF SWP)
Measuring Instrument	Oscilloscope TRIG SLOPE: +, [–]
Adjustment Page	D
Adjustment Address	5E, 63
Specified Value	3.58 MHz level: 5.5 MHz level= 4: (3 ± 0.3)

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) After memorizing the data of page: D, address: 05, set data: 1A.
3) Press the PAUSE button of the adjusting remote commander.
4) Change the data of address: 5E [63] of page D, and adjust the level ratio of 3.58 MHz and 5.5 MHz of PB RF output waveform to the specified value.
   Note 2: After each address adjustment, be sure to press the PAUSE button of the adjusting remote commander and memorize the data.
5) Set the data memorized at step 2) to page: D, address: 05, and press the PAUSE button of the adjusting remote commander.

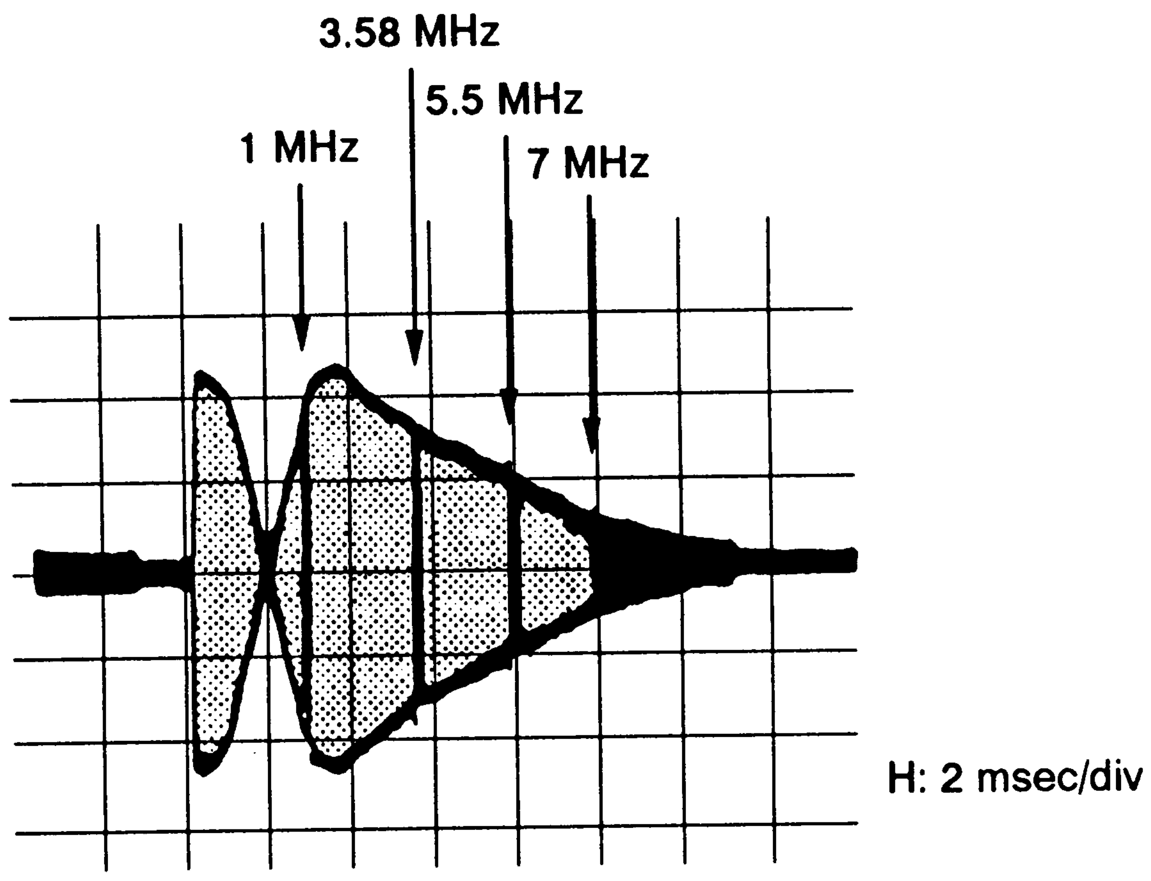


Fig. 6-3-7.

2. Flying Erase Check (VS board)

Mode	Record
Signal	Arbitrary
Measurement Point	Pin ⑫ of CN101 (FE (X))
Measuring Instrument	Oscilloscope and frequency counter
Specified Value	Frequency: 8.0 ± 0.5 MHz Voltage: 6.0 ± 1 Vp-p (ME tape) Above 7.0 Vp-p (MP tape)

Checking method:

1) Check that the oscillation frequency and the oscillation voltage satisfieds the specified value.

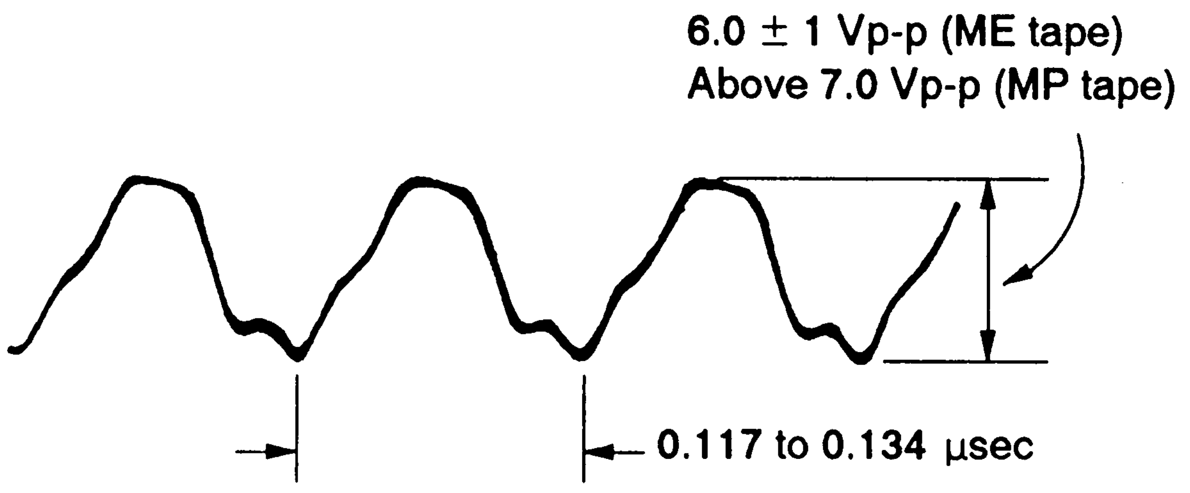


Fig. 6-3-8.

3. VXO Oscillation Frequency Check (VS board)

Mode	Record
Signal	Color bar
Measurement Point	Pin (61) of IC201
Measuring Instrument	Frequency counter
Specified Value	3579545 ± 50 Hz

Note: Connect the frequency counter via a high impedance (approximately 10 MΩ) and low capacity (below 10 pF) buffer.

Adjusting method:

1) Check that the oscillation frequency of pin (61) of IC201 is 3579545 ± 50 Hz.

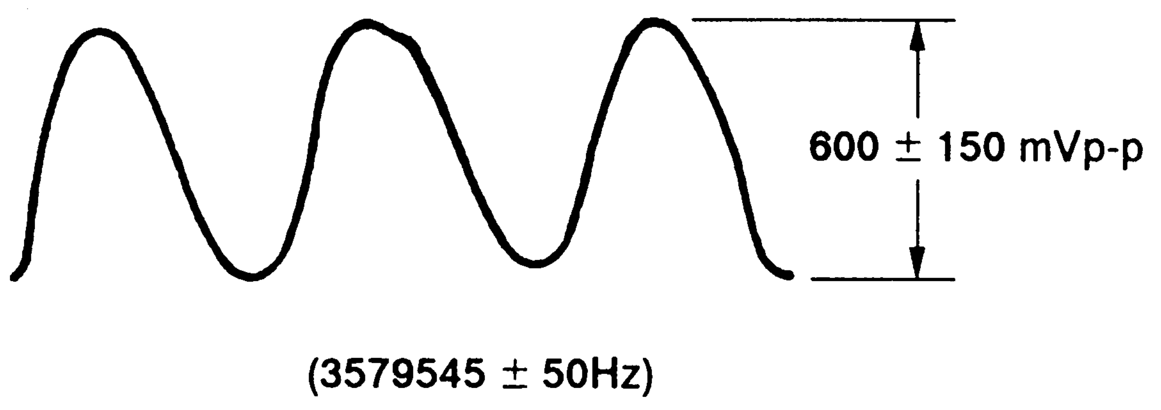


Fig. 6-3-9.

4. SYNC AGC Level Adjustment (VS board)

Adjust so that the Y signal level to be recorded becomes consistent. If it is not consistent, the camera EE image and OA image will be brighter or darker than normal.

Mode	Camera record
Signal	Color bar (Camera input) Note 1
Measurement Point	Pin ⑥ of CN201 (VIDEO I/O) Note 2
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	70
Specified Value	A=1.00 ± 0.025V

Note 1: The chroma signal input is not required.

Note 2: Terminate the video out terminal at 75Ω .
75Ω resistor (Part code: 1-247-804-11)

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 70, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

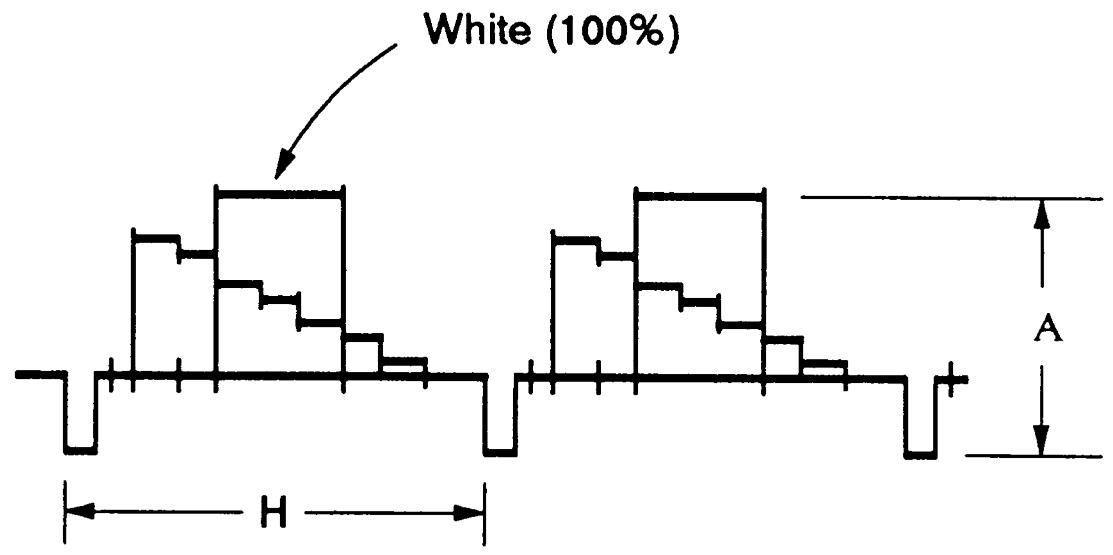


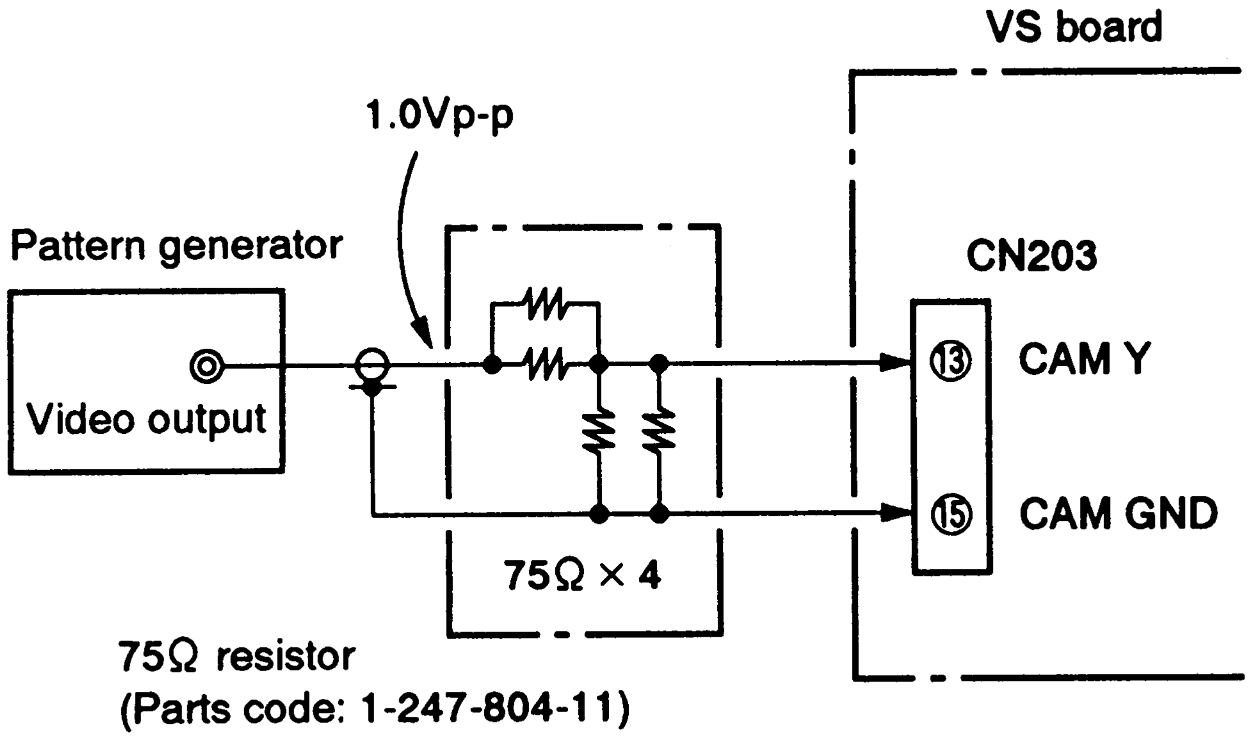
Fig. 6-3-10.

5. Comb Filter Adjustment (VS board)

Set the level and phase of the 1H delayed signal for the comb filter.

Mode	Camera record
Signal	Color bar (Note 1)
Measurement Point	Pin ⑭ of IC201 (Y COMB OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	71, 84
Specified Value	Residual chroma component (A) is minimum.

Note 1: Connect the pattern generator as shown in the following figure.



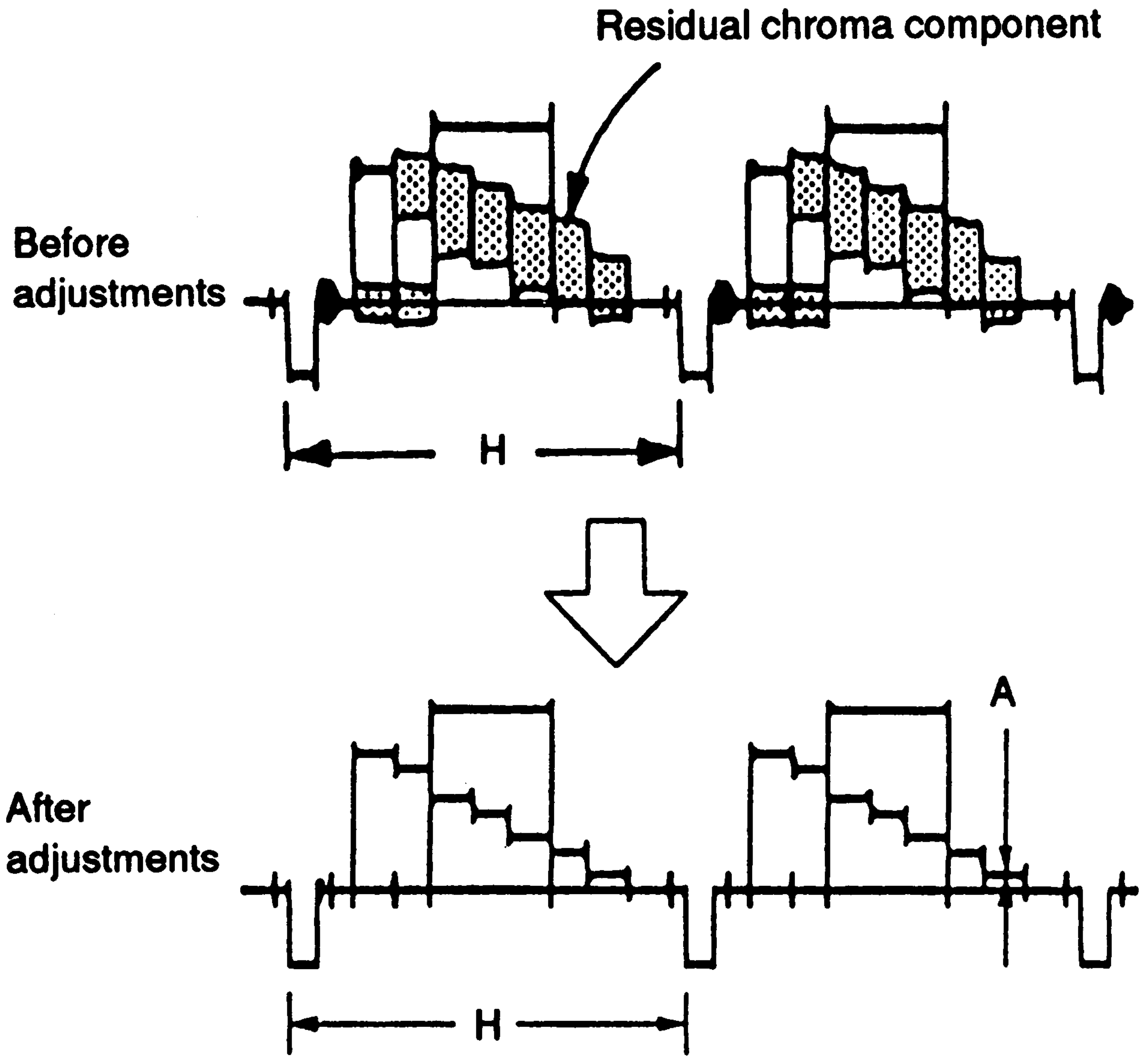


Fig. 6-3-11.

Adjusting method:
1) Set to the VIDEO input mode.
2) Set to the record mode.
3) Set data: 01 to page: 1, address: 00.
4) Set data: 00 to page: 2, address: 00.
5) Set data: 04 to page: 2, address: B0.
6) After memorizing the data of address: 9A of page: 2, set data: 10 to the address.
7) After memorizing the data of address: 9D of page: 2, set data: 30 to the address.
8) Change the data of page: D, address: 71, and adjust the residual chroma component (A) to minimum.
9) Change the data of page: D, address 84 so that the residual chroma component becames minimum.
10) Repeat 8) and 9).
11) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments
1) Set the data memorized at step 7) to address: 9D of page: 2.
2) Set the data memorized at step 6) to address: 9A of page: 2.
3) Set data: 00 to page: 2, address: B0.

6. Emphasis Input Level Adjustment (VS board)

Y level of emphasis circuit setting. If deviated, this causes too bright or too dark image during play back after recording.

Mode	Camera record
Signal	Color bar (CAMERA input)
Measurement Point	Pin ⑤ of IC201 (EMPH IN) or Pin ⑤ of IC205
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	82
Specified Value	A=0.50 ± 0.01V

Note 1: The chroma signal input is not required.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 82, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

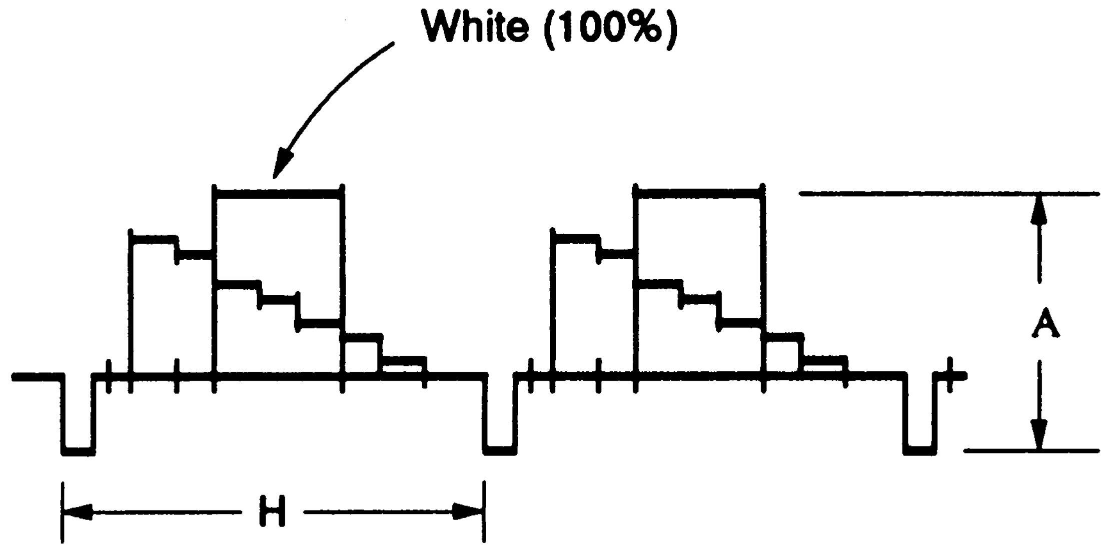


Fig. 6-3-12.

7. WHITE CLIP Check (VS board)

Mode	Camera record
Signal	Color bar (CAMERA input)
Measurement Point	Pin ㊴ of IC201 (Y RF OUT)
Measuring Instrument	Oscilloscope
Specified Value	A=220 ± 10%

Note 1: The chroma signal input is not required.

Checking method:

1) Set to the record mode.
2) Set data: 00 to page: 2, address: 00.
3) Set data: 04 to page: 2, address: B0.
4) After memorizing the data of address: 9A of page: 2, set data: 01 to the address.
5) Check that the white clip level (A) satisfies the specified value.

Processing after completing adjustments

1) Set the data memorized at step 4) to address: 9A of page: 2.
2) Set data: 00 to page: 2, address: B0.

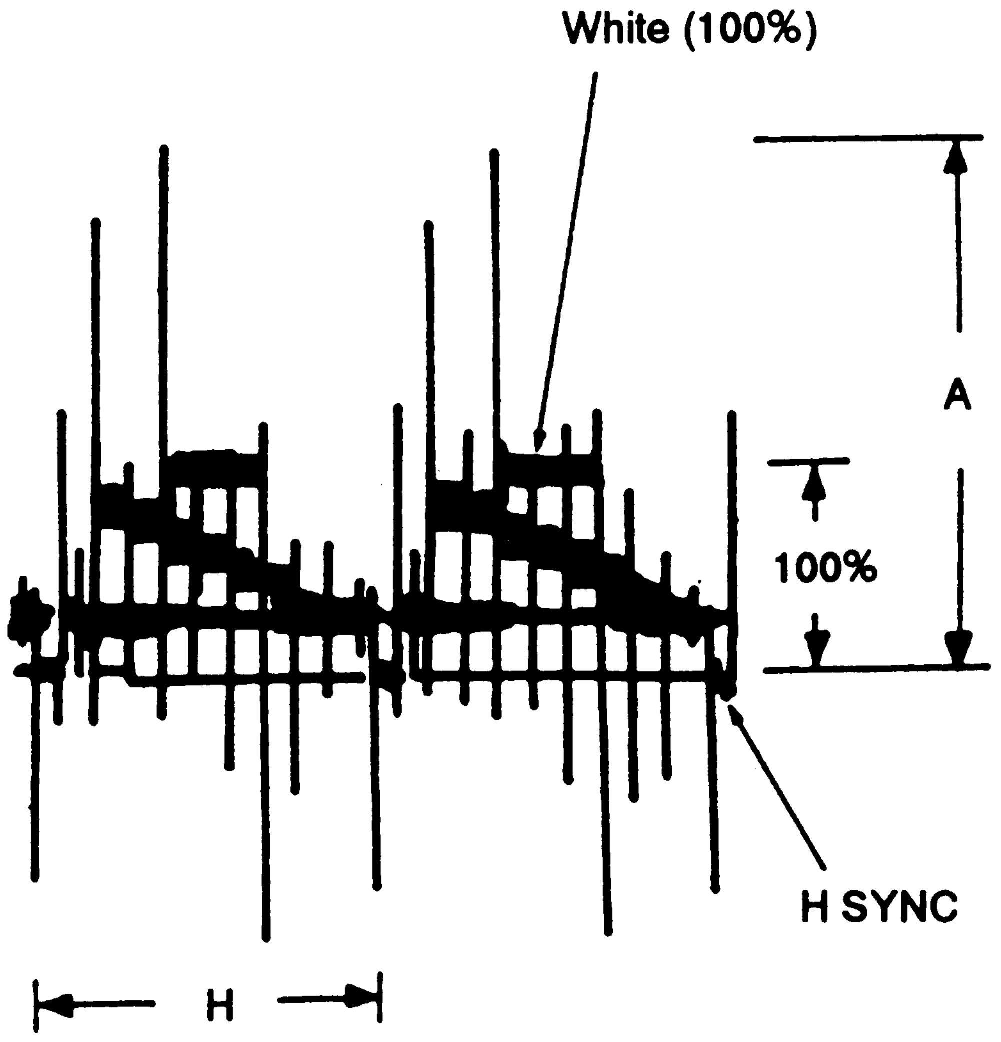


Fig. 6-3-13.

8. DARK CLIP Check (VS board)

Mode	Camera record
Signal	Color bar (CAMERA input)
Measurement Point	Pin ㊴ of IC201 (Y RF OUT)
Measuring Instrument	Oscilloscope
Specified Value	A=60 ± 10%

Note 1: The chroma signal input is not required.

Checking method:

1) Set to the record mode.
2) Set data: 00 to page: 2, address: 00.
3) Set data: 04 to page: 2, address: B0.
4) After memorizing the data of address: 9A of page: 2, set data: 01 to the address.
5) Check that the dark clip level (A) satisfies the specified value.

Processing after completing adjustments

1) Set the data memorized at step 4) to address: 9A of page: 2.
2) Set data: 00 to page: 2, address: B0.

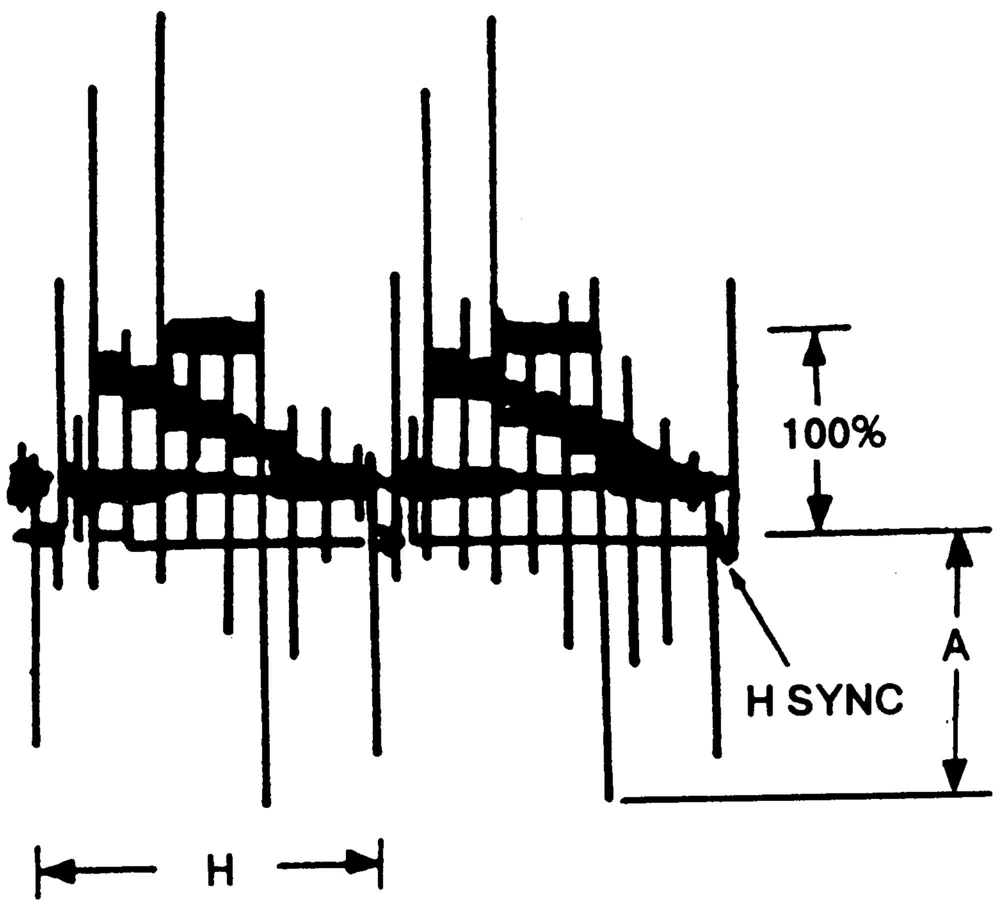


Fig. 6-3-14.

9. DE EMPH Level Adjustment (VS board)

De-emphasis input level setting. If deviated, this causes excessive brightness or darkness.

Mode	Playback
Signal	Alignment tape: For checking operations Color bar section (WR5-5NSP)
Measurement Point	Pin ㉓ of IC201 (DL IN 1)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	87
Specified Value	A=0.54 ± 0.01V

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 87, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Perform "PB Y OUT Level Adjustment".

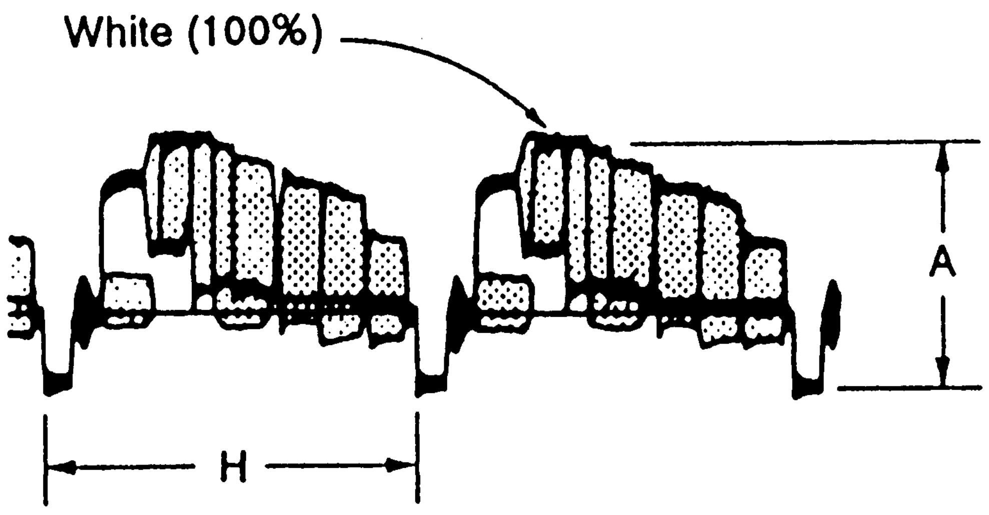


Fig. 6-3-15.

10. PB Y OUT Level Adjustment

PB LINE OUT Y level setting. If deviated, this causes too bright or too dark picture.

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5NSP) Color bar section
Measurement Point	Pin ⑥ of CN201 (VIDEO I/O)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	83
Specified Value	A=1.0 ± 0.05V

Note 1: Terminate the video output/output terminal at 75Ω.
75Ω resistor (Part code: 1-247-804-11)

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 83, and adjust so that the video signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

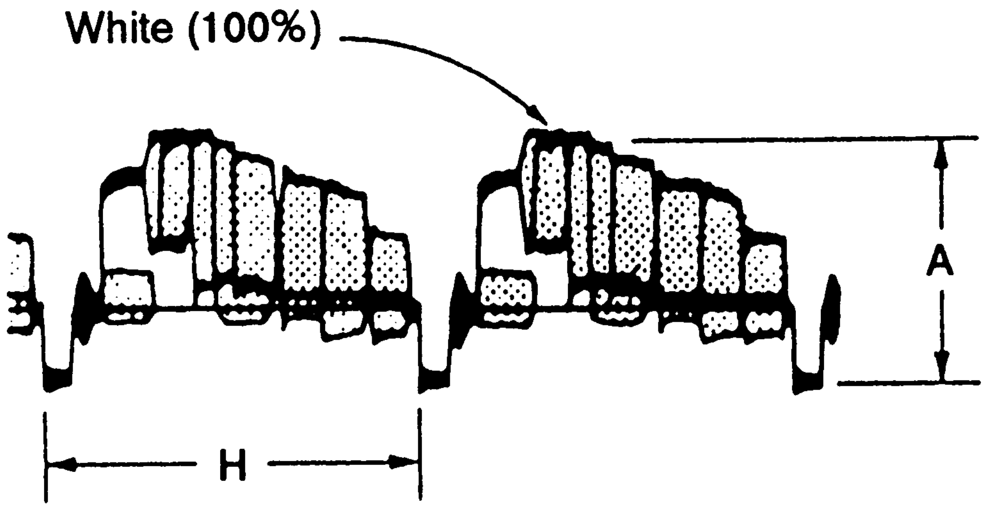


Fig. 6-3-16.

11. Y FM Carrier Frequency Adjustment (VS board)

FM carrier frequency of REC Y setting. If deviated, this caused blurred played back picture or deteriorated resolution.

Mode	Record
Signal	No signal (CAMERA input)
Measurement Point	Pin ㊴ of IC201 (Y RF OUT) (JL209)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	75
Specified Value	4.385 ± 0.01 MHz

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 75, and adjust so that the Y FM carrier frequency becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

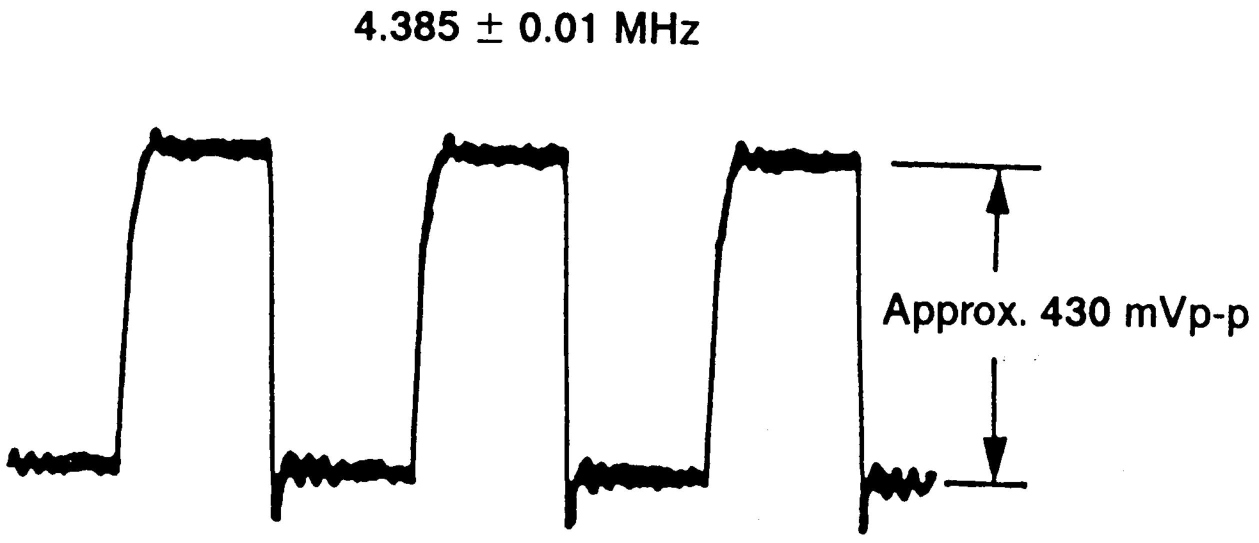


Fig. 6-3-17.

10. PB Y OUT Level Adjustment

PB LINE OUT Y level setting. If deviated, this causes too bright or too dark picture.

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5NSP) Color bar section
Measurement Point	Pin ⑥ of CN201 (VIDEO I/O)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	83
Specified Value	A=1.0 ± 0.05V

Note 1: Terminate the video output/output terminal at 75Ω. 75Ω resistor (Part code: 1-247-804-11)

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 83, and adjust so that the video signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

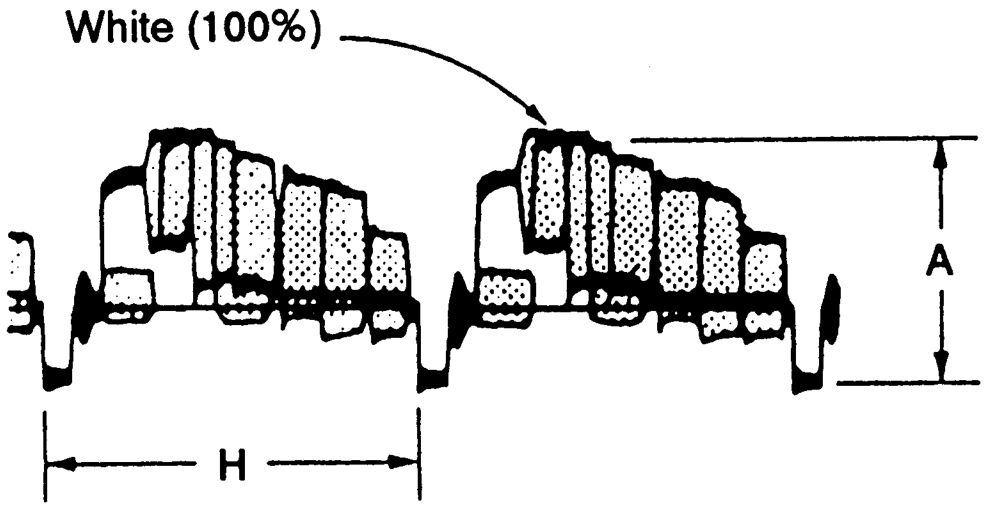


Fig. 6-3-16.

11. Y FM Carrier Frequency Adjustment (VS board)

FM carrier frequency of REC Y setting. If deviated, this caused blurred played back picture or deteriorated resolution.

Mode	Record
Signal	No signal (CAMERA input)
Measurement Point	Pin ㊴ of IC201 (Y RF OUT) (JL209)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	75
Specified Value	4.385 ± 0.01 MHz

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 75, and adjust so that the Y FM carrier frequency becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

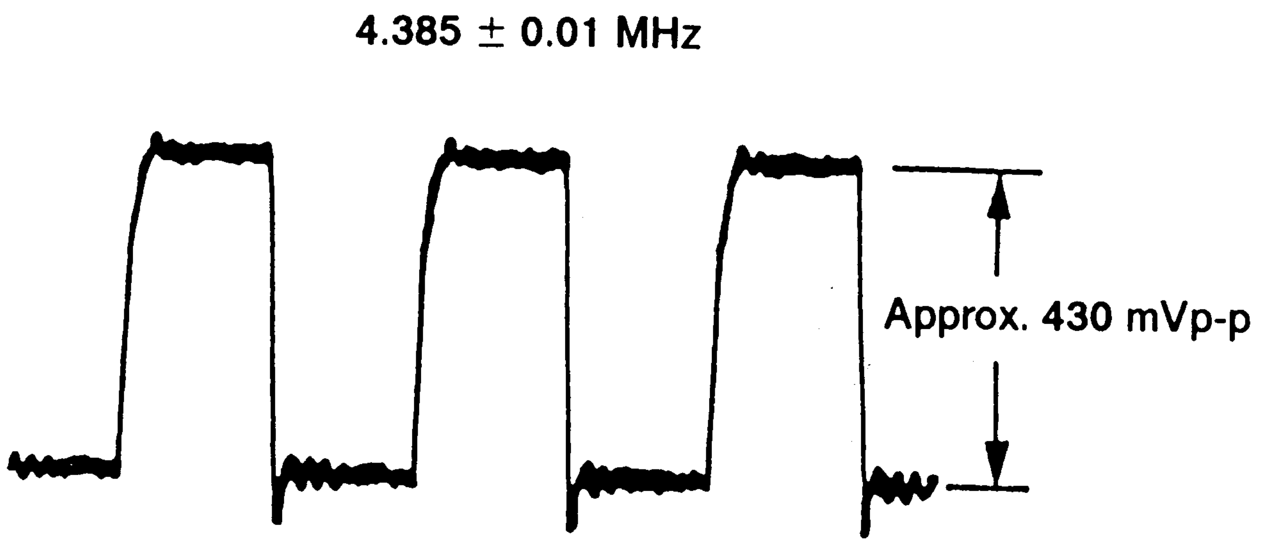


Fig. 6-3-17.

12. Y FM Deviation Adjustment (VS board)

FM deviation of REC Y setting. If deviated, this causes too bright/dark image, or marked occurrence of black picture or deteriorated resolution.

Mode	Record and playback
Signal	Color bar (CAMERA input)
Measurement Point	Pin ㉓ of IC201 (DL IN 1)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	77
Specified Value	A=0.54 ± 0.01V

Note 1: Check that "Emphasis Input Level Adjustment", have been completed.

Note 2: The chroma signal input is not required.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Record the color bar signal.
3) Playback the recorded signal.
4) Check the playback signal level (A).
   Specification:A=0.54 ± 0.01V
5) If the specification is not satisfied, change the data of page: D, address: 77, and repeat steps 2) to 4).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When bigger than the specified value	Decrease

6) Press the PAUSE button of the adjusting remote commander.
7) Perform "Y FM Carrier Frequency Adjustment".

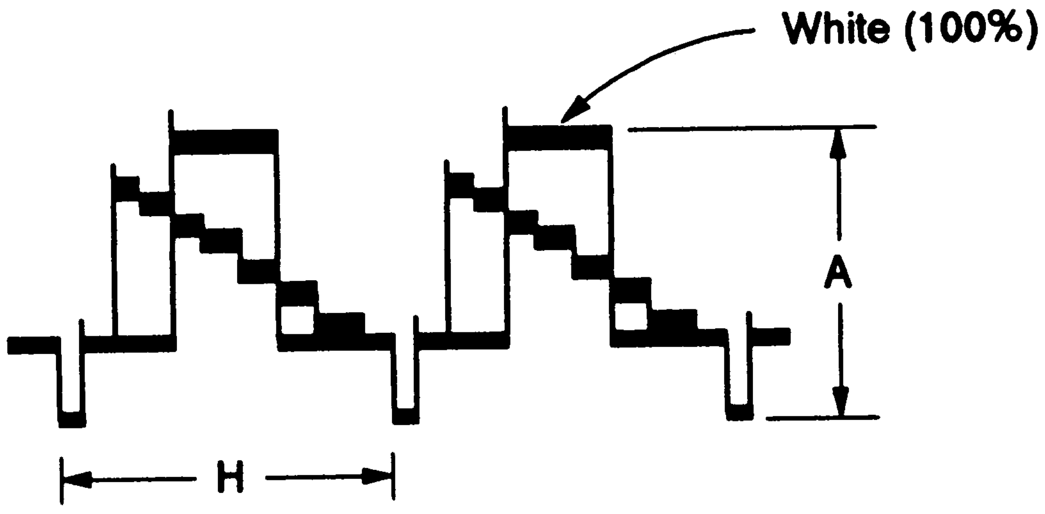


Fig. 6-3-18.

13. Chroma Emphasis Adjustment 1 (VS board)

Emphasis center frequency setting. If deviated, this causes unnatural color.

Mode	Record
Signal	Color bar (CAMERA input)
Measurement Point	Pin ⑧ of IC201 (REC C OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	80, 81
Specified Value	Minimum fo component

Adjusting method:

1) Set to the record mode.
2) Set data: 01 to page: 1, address: 00.
3) Set data: 00 to page: 2, address: 00.
4) Set data: 04 to page: 2, address: B0.
5) After memorizing the data of address: 9A of page: 2, set data: 02 to the address.
6) Change the data of page: D, address: 80, and adjust so that the amplitude of the latter section of the chroma signal (red section) becames minimum.
7) Press the PAUSE button of the adjusting remote commander.
8) Set the same data as address: 80 of page: D to address: 81 of page D.
9) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

1) Set the data memorized at step 5) to address: 9A of page: 2.
2) Set data: 00 to page: 2, address: B0.

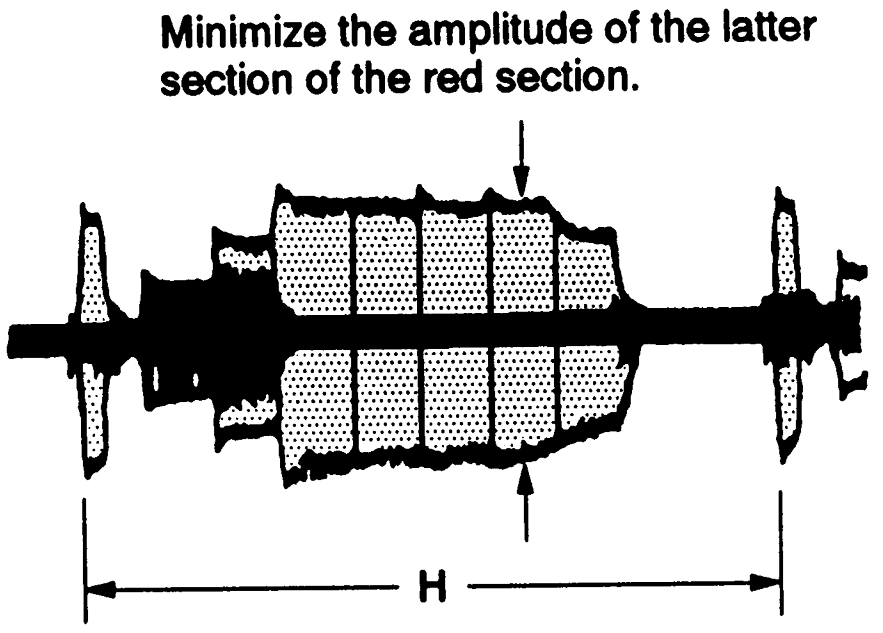

Minimize the amplitude of the latter section of the red section.

Fig. 6-3-19.

14. Chroma Emphasis Adjustment 2 (VS board)

Emphasis center frequency setting. If deviated, this causes unnatural color.

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5NSP) Color bar section
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	D
Adjustment Address	81, 80
Specified Value	The path from the blue luminance point to black luminance point should be a straight line.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 81, and adjust so that the path from the blue luminance point to black luminance point becames a straight line.
3) Press the PAUSE button of the adjusting remote commander.
4) Set the same data as address: 81 of page: D to address: 80 of page: D.
5) Press PAUSE button of the adjusting remote commander.

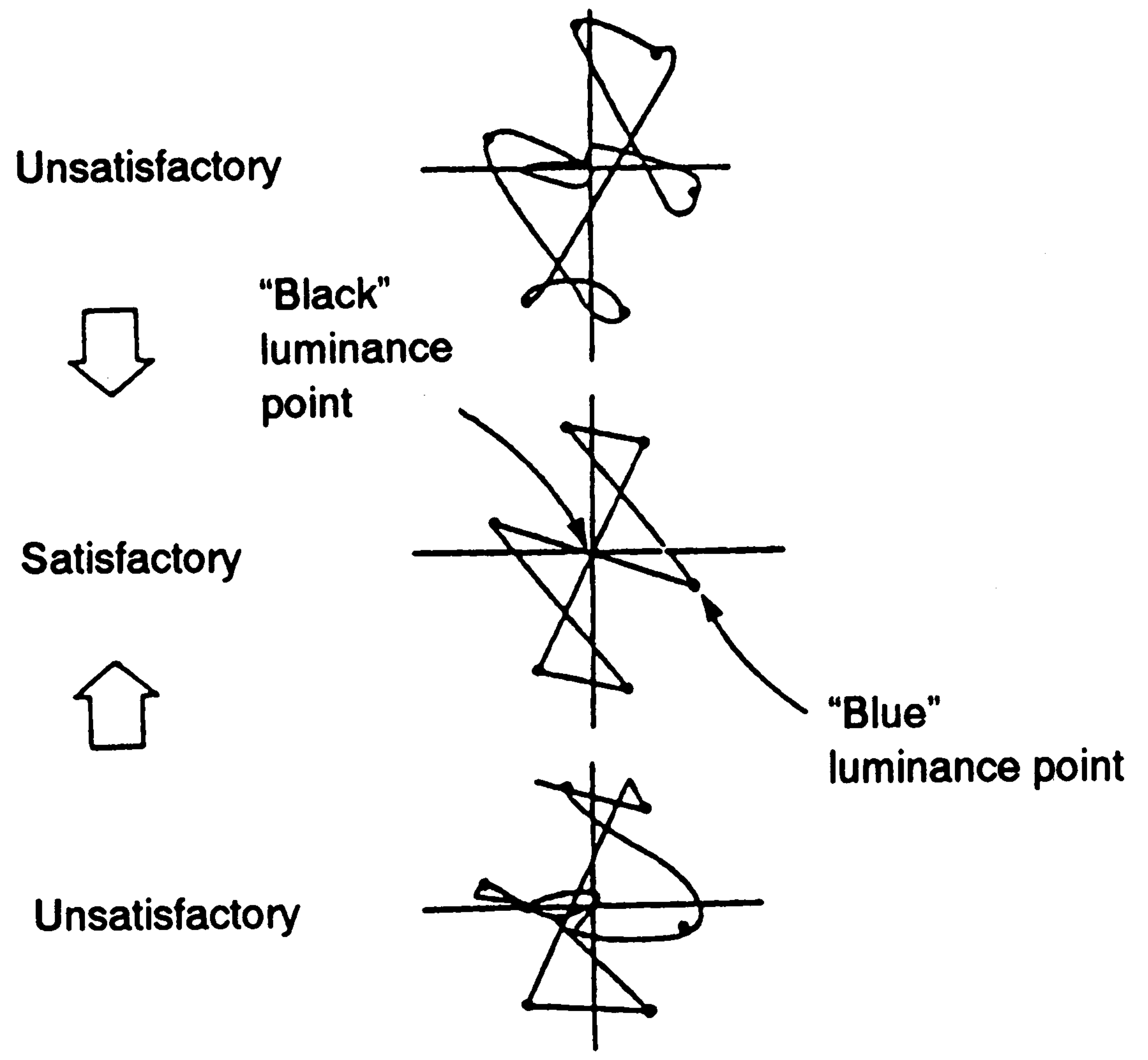


Fig. 6-3-20.

15. Comb Filter Fine Adjustment (VS board)

Set the level and phase of the 1H delayed signal for the comb filter. If deviated, this causes marked occurrence of beets in played back picture.

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5NSP) Color bar section
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	D
Adjustment Address	71, 84
Specified Value	Minimum color luminance point movement when the "Edit" switch is turned on/off

Note 1: Turn the edit ON/OFF at the menu screen.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Minimize the movements of the color luminance point when the edit is on/off with the data of page D address 84 changed.
3) Change the data of page: D, address: 71 and minimize the movements of the color luminance point when the edit is on/off
4) Press the PAUSE button of the adjusting remote commander.
5) Repeat steps 2) to 4).

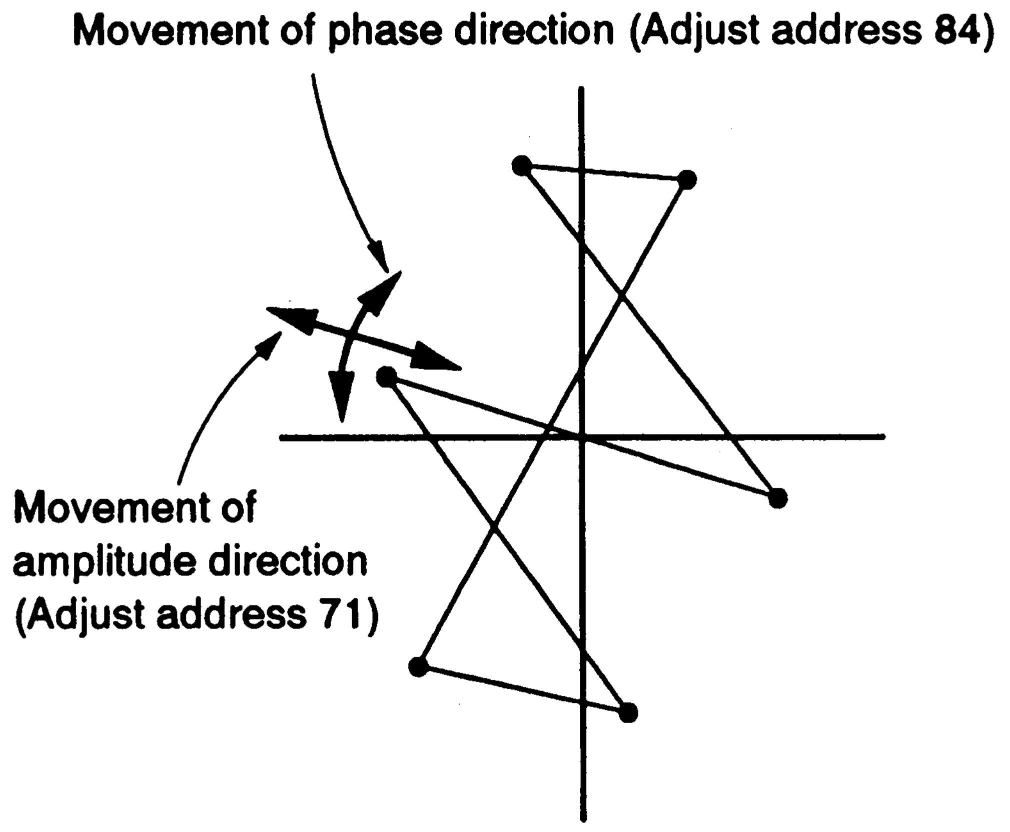

Movement of phase direction (Adjust address 84)
Movement of amplitude direction (Adjust address 71)

Fig. 6-3-21.

16. REC Y Level Adjustment (VS board)

Recording level of luminance signal setting. If deviated, this causes black stretch over modulation noise or color shade.

Mode	Record
Signal	No signal
Measurement Point	Pin ⑥ of CN102 (REC 2)
Measuring Instrument	Oscilloscope Board width limit: 20 MHz
Adjustment Page	D
Adjustment Address	47, 43, 46, 42
Specified Value	A=145 ± 5 mVp-p

Note 1: Use a normal MP type tape.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) After memorizing the data of address: 3B of page: D, set data: FF to the address.
3) Set data: FF to address: 43 of page: D, and press the PAUSE button of the adjusting remote commander.
4) Change the data of page: D, address: 47, and adjust so that REC Y level (A) becomes the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Set data to address: 42, 43, 46 of page: D as shown in following table.

(Be sure to press the PAUSE button of the adjusting remote control unit after setting each data.)

Address	Data
42	Same data as address: 47
43	Same data as address: 47
46	Same data as address: 47

7) Set the data memorized at step 2) to address: 3B of page: D and press the PAUSE button of the adjusting remote commander.

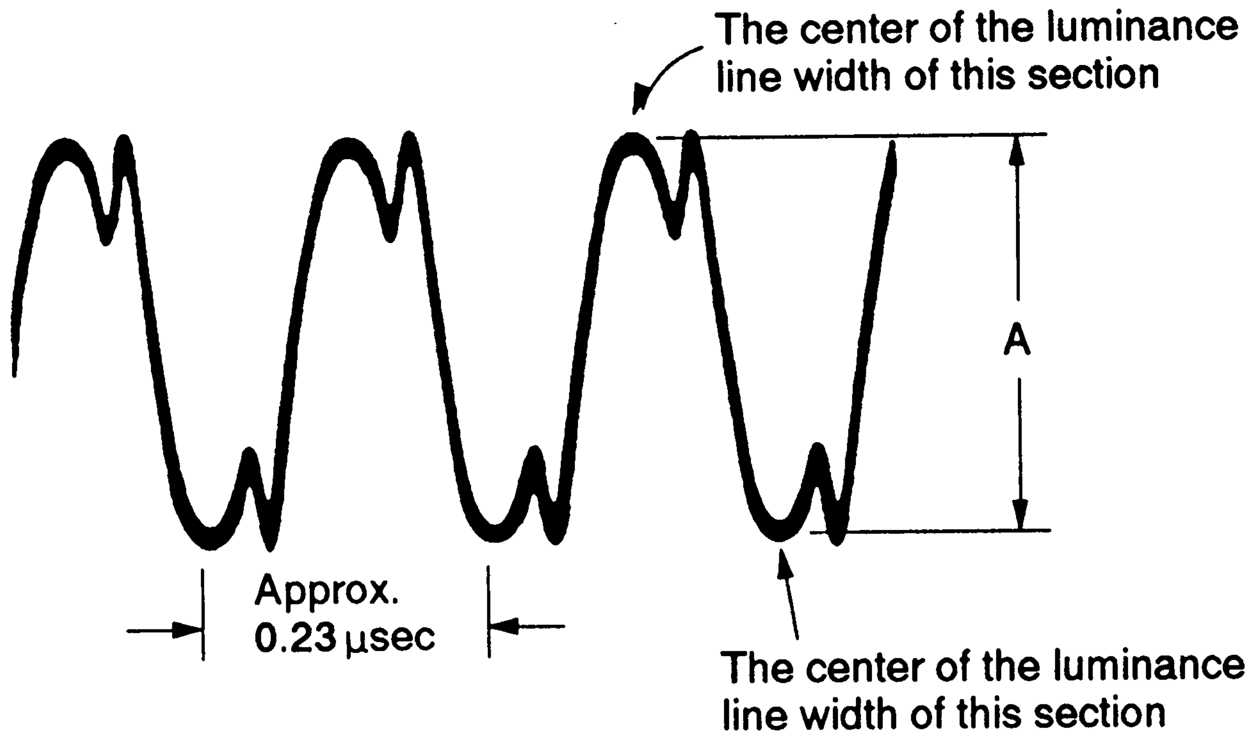

The center of the luminance line width of this section
A
Approx. 0.23 μsec
The center of the luminance line width of this section

Fig. 6-3-22.

17. REC L Adjustment (VS board)

Set the recording levels of the REC AFM signal and REC ATF signal. If the level is too low, the audio S/N will deteriorate, tracking will not be stable, or SP/LP will not be discriminated properly. If too high, color beets will be produced on the self-recording/playback image.

Mode	Record
Signal	No signal (VIDEO input)
Measurement Point	Pin ⑥ of CN102 (REC 2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	3B, 39, 3A, 38
Specified Value	A=6.7 ± 1.0 mVp-p

Note 1: Use a MP type tape.

Note 2: AU board is required for this adjustment.

Note 3: Don't insert any plug into the right audio input terminal.

Connection:

1) Connect Emitter of Q113 and GND with a jumper wire.
2) Connect Pin ⑤ of IC508 and GND with a 0.01 μF capacitor. (Parts cord: 1-101-004-00)

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 3B, and adjust so that the REC AFM signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Read the data of page: D, address: 3B, and this data is named D3B.
5) Set data: D3B to address: 39 of page D.
6) Press the PAUSE button of the adjusting remote commander.
7) Convert D3B to decimal notation, and obtain D3B′. (Refer to Table 6-1-3. "Hexadecimal notation-decimal notation conversion table")
8) Culculate D3A′ using following equation (decimal notation calculation).
   D3A′=D3B′−7
9) Convert D3A′ to hexadecimal notation, and obtain D3A.
10) Set data: D3A to address: 3A of page D.
11) Press the PAUSE button of the adjusting remote commander.
12) Set data: D3A to address: 38 of page D.
13) Press the PAUSE button of the adjusting remote commander.
14) Perform "REC CHROMA Level Adjustment".

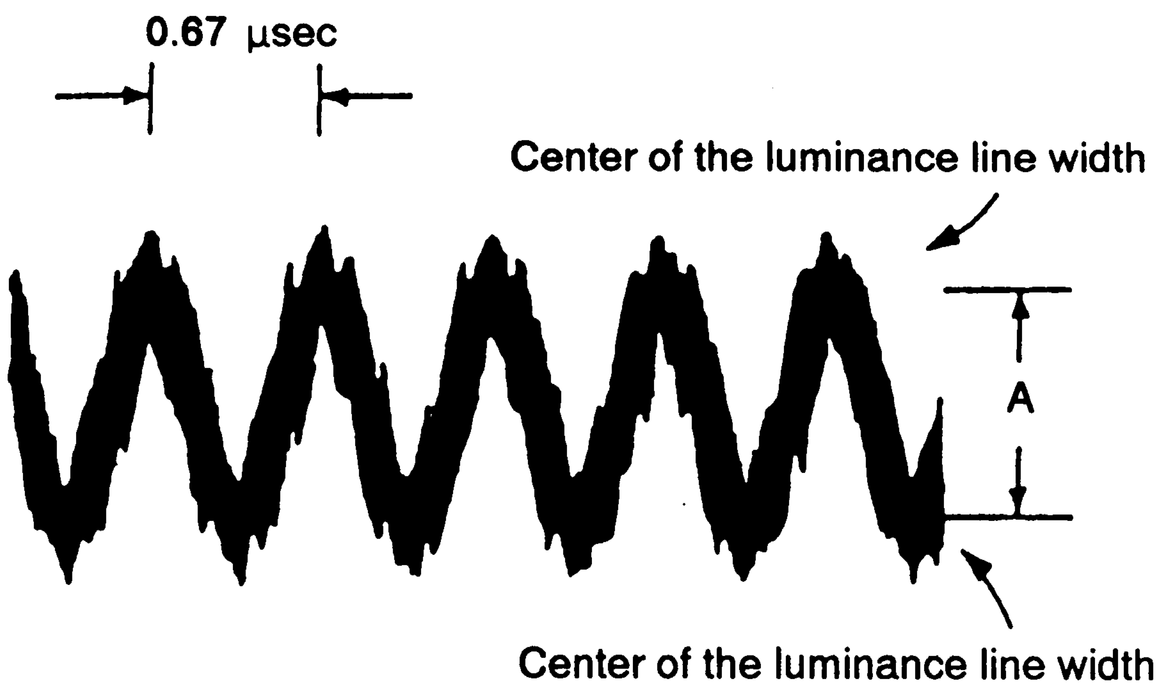

0.67 μsec
Center of the luminance line width
A
Center of the luminance line width

Fig. 6-3-23.

18. REC CHROMA Level Adjustment (VS board)

Set REC CHROMA signal level. If it is lower than its normal level, chroma signal noise in played back picture will increase. If it is set higher, Y signal noises will increase and white modulation noises will be prodused.

Mode	Record
Signal	Color bar (VIDEO input)
Measurement Point	Pin ⑥ of CN102 (REC 2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	33, 32, 37, 36
Specified Value	A=29 ± 3 mVp-p

Note 1: Use a MP type tape.

Connection:

1) Connect Emitter of Q113 and GND with a jumper wire.
2) Connect Pin ⑤ of IC508 and GND with a 0.01 μF capacitor. (1-101-004-00)
3) Disconnect AU board.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 33, and adjust so that the REC CHROMA signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Read the data of page: D, address: 33, and this data is named D33.
5) Set data: D33 to address: 32 of page D.
6) Press the PAUSE button of the adjusting remote commander.
7) Set data: D33 to address: 36 of page D.
8) Press the PAUSE button of the adjusting remote commander.
9) Set data: D33 to address: 37 of page D.
10) Press the PAUSE button of the adjusting remote commander.

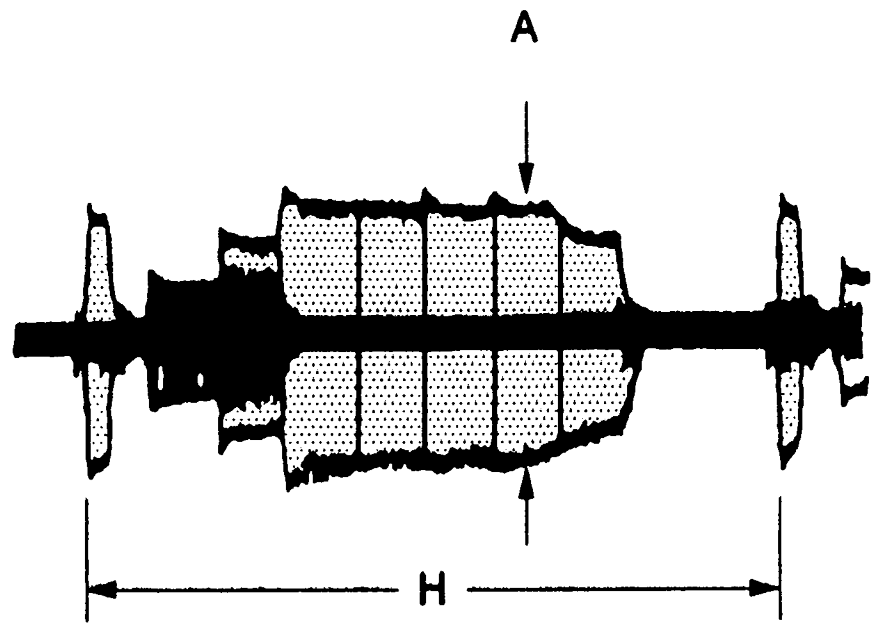


Fig. 6-3-24.

19. REC ATF Level Check (VS board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑥ of CN102 (REC 2)
Measuring Instrument	Oscilloscope
Specified Value	A=6.4 ± 1.5 mVp-p

Note 1: Use a MP type tape.

Connection:

1) Connect Emitter of Q113 and GND with a jumper wire.
2) Disconnect AU board.

Adjusting method:

1) Check that the REC ATF signal level (A) satisfise the specified value.

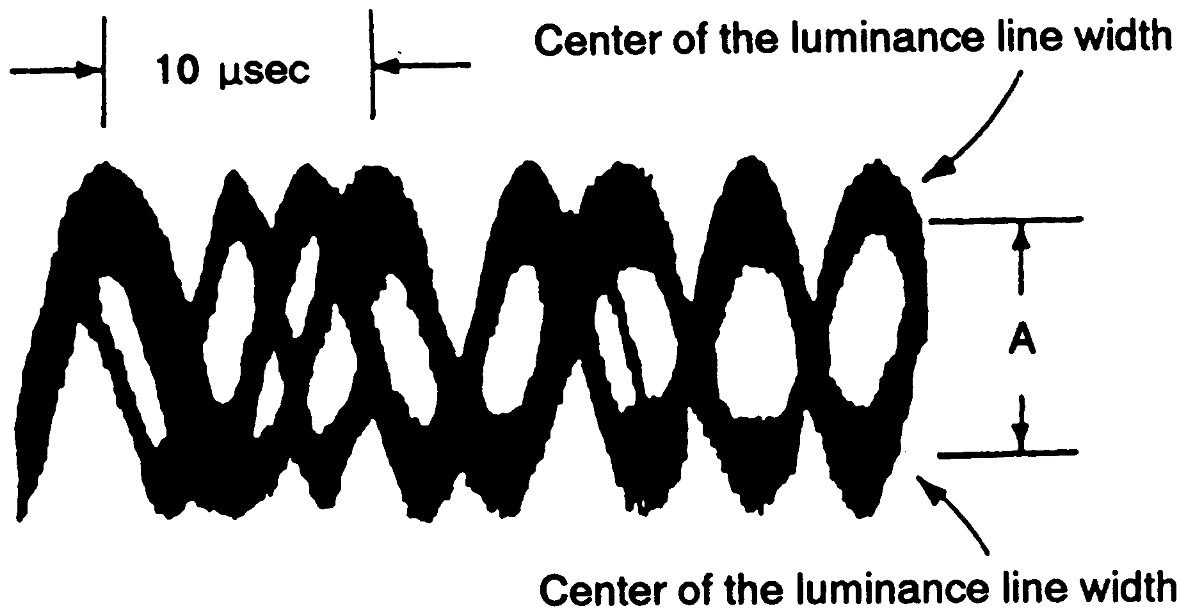


Fig. 6-3-25.

3-6. Hi8 VIDEO SYSTEM ADJUSTMENTS (CCD-TR100/TR600/TR880)

The adjustments of the video system must be performed according to the following adjustment procedure.
The color video signal supplied from the pattern generator is used as the video input signal for adjusting the video system in recording mode. Check that the sync signal and the color burst signal satisfy the specification specified during the adjustment set-up shown in Figs. 6-3-2. and 6-3-3.

[Adjusting procedure]

1) Playback frequency characteristics adjustment
2) Flying erase check
3) VXO oscillation frequency check
4) SYNC AGC level adjustment
5) Comb filter adjustment
6) Emphasis input level adjustment
7) WHITE CLIP check
8) DARK CLIP check
9) DE EMPH level adjustment
10) PB Y out level adjustment
11) Normal mode Y FM carrier frequency adjustment
12) Normal mode Y FM deviation adjustment
13) Hi8 mode Y FM carrier frequency adjustment
14) Hi8 mode Y FM deviation adjustment
15) Chroma emphasis adjustment 1
16) Chroma emphasis adjustment 2
17) Comb filter fine adjustment
18) REC Y level adjustment
19) REC L adjustment
20) REC CHROMA level adjustment
21) REC ATF level check

1. Playback Frequency Characteristic Adjustment (VS board)

Eliminate the differences in the head characteristics of each channel. If there are differences, flickers and over modulation noises will be produced.

Note 1: The adjusting element for CH2 is shown in parentheses [ ].

Mode	Playback
Signal	Alignment tape: For frequency characteristic adjustment (WR5-7NE)
Measurement Point	CH1: Pin ③ of CN102 (PB RF) EXT TRIG: Pin ④ of CN102 (RF SWP)
Measuring Instrument	Oscilloscope TRIG SLOPE: +, [–]
Adjustment Page	D
Adjustment Address	5A, 5B, 5C, 5D, 5E [5F, 60, 61, 62, 63]
Specified Value	4.5 MHz level: 8.5 MHz level= 3: (2 ± 0.2)

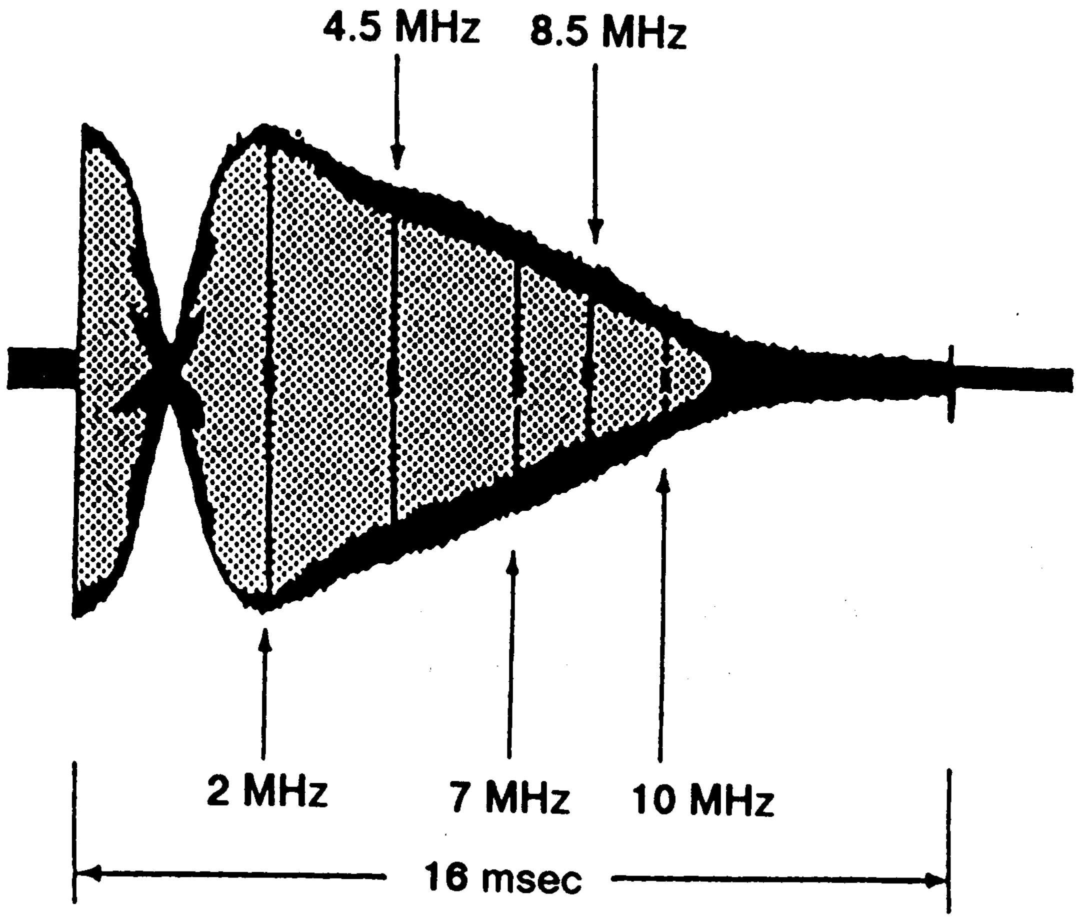


Fig. 6-3-26.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Press the PAUSE button of the adjusting remote commander.
3) Change the data of address: 5A [5F] of page D, and adjust the level ratio of 4.5 MHz and 8.5 MHz of PB RF output waveform to the specified value.

   Note 2: After each address adjustment, be sure to press the PAUSE button of the adjusting remote commander and memorize the data.
4) Read the data of page: D, address: 5A, and this data is named D5A.
5) Read the data of page: D, address: 5F, and this data is named D5F.
6) Set data to address: 5B to 5E and 60 to 62 of page: D as shown in following table.

   (Be sure to press the PAUSE button of the adjusting remote commander after setting each data.)

Address	**Data**
5B	D5A
5C	D5A
5D	D5A
5E	D5A+8
60	D5F
61	D5F
62	D5F
63	D5F+8

2. Flying Erase Check (VS board)

Mode	Record
Signal	Arbitrary
Measurement Point	Pin ⑫ of CN101 (FE (X))
Measuring Instrument	Oscilloscope and frequency counter
Specified Value	Frequency: 8.0 ± 0.5 MHz Voltage: 6.0 ± 1 Vp-p (ME tape) Above 7.0 Vp-p (MP tape)

Checking method:

1) Check that the oscillation frequency and the oscillation voltage satisfieds the specified value.

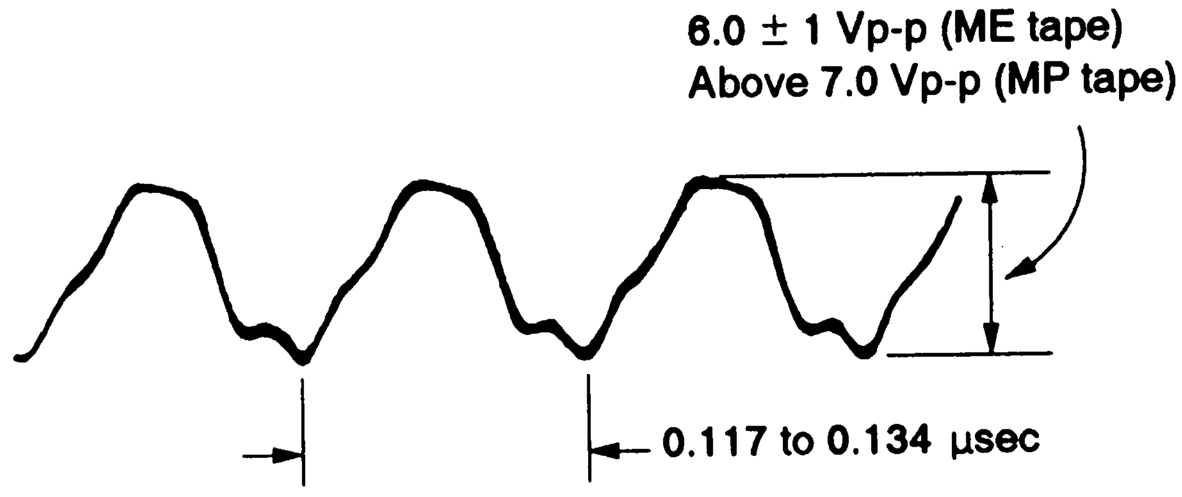


Fig. 6-3-27.

3. VXO Oscillation Frequency Check (VS board)

Mode	Record
Signal	Color bar
Measurement Point	Pin (61) of IC201
Measuring Instrument	Frequency counter
Specified Value	3579545 ± 50 Hz

Note: Connect the frequency counter via a high impedance (approximately 10 MΩ) and low capacity (below 10 pF) buffer.

Adjusting method:

1) Check that the oscillation frequency of pin (61) of IC201 is 3579545 ± 50 Hz.

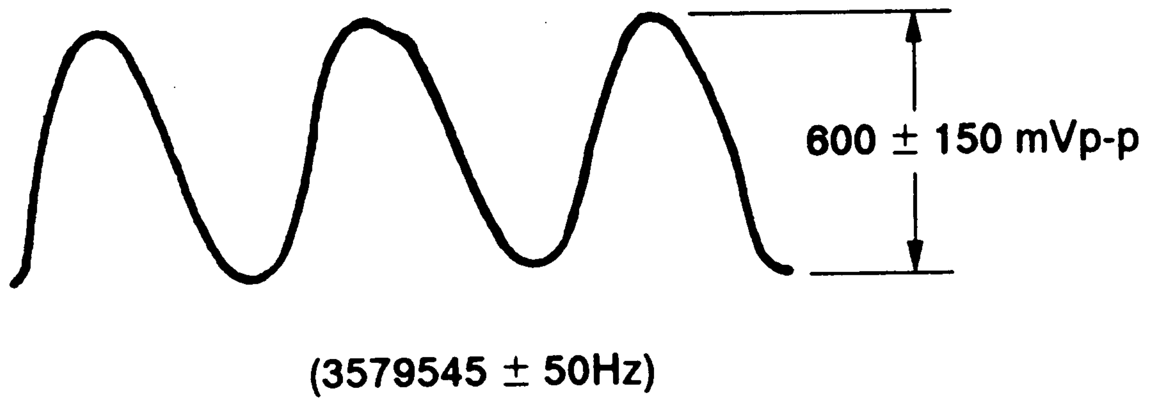


Fig. 6-3-28.

4. SYNC AGC Level Adjustment (VS board)

Adjust so that the Y signal level to be recorded becomes consistent. If it is not consistent, the camera EE image and OA image will be brighter or darker than normal.

Mode	Record
Signal	Color bar (Camera input) Note 1
Measurement Point	Pin ② of CN201 (Y IN/OUT) Note 2
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	70
Specified Value	A=1.00 ± 0.025V

Note 1: The chroma signal input is not required.

Note 2: Connect Pin ② of CN201 and Pin ③ of CN201 (S-Y GND) with a 75Ω resistor.
75Ω resistor (Part code: 1-247-804-11)

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 70, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

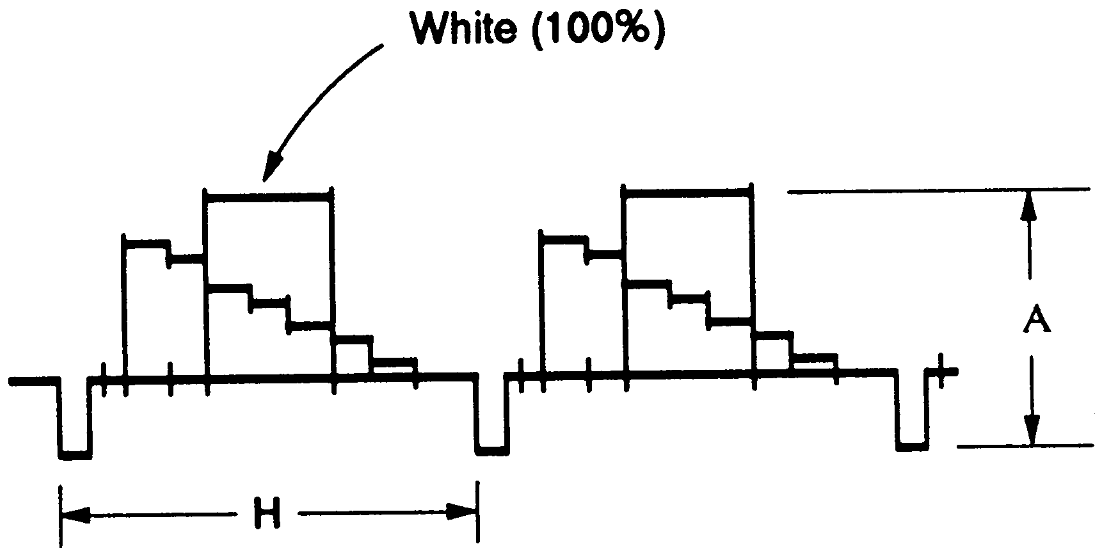


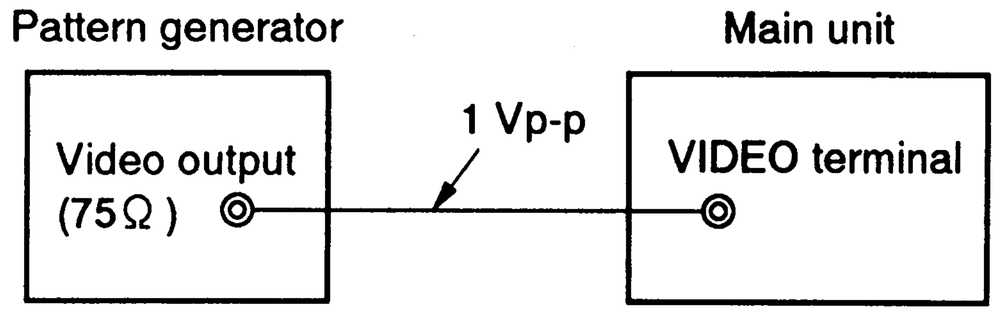
Fig. 6-3-29.

5. Comb Filter Adjustment (VS board)

Mode	Record
Signal	Color bar (Note 1)
Measurement Point	Pin ⑭ of IC201 (Y COMB OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	71, 84
Specified Value	Residual chroma component (A) is minimum.

Note 1: Connect the pattern generator as shown in the following figure.

Note 2: Connect Pin ㉔ of IC251 (INPUT SEL) and Pin ⑨ of IC251 (Vcc) with a jumper wire.



Note: The TV monitor cannot be connected.
Use the view finder to monitor.

Adjusting method:

1) Set to the VIDEO input mode.
2) Set to the record mode.
3) Set data: 01 to page: 1, address: 00.
4) Change the data of page: D, address: 71, and adjust the residual chroma component (A) to minimum.
5) Change the data of page: D, address 84 so that the residual chroma component becomes minimum.
6) Repeat 4) and 5).
7) Press the PAUSE button of the adjusting remote commander.

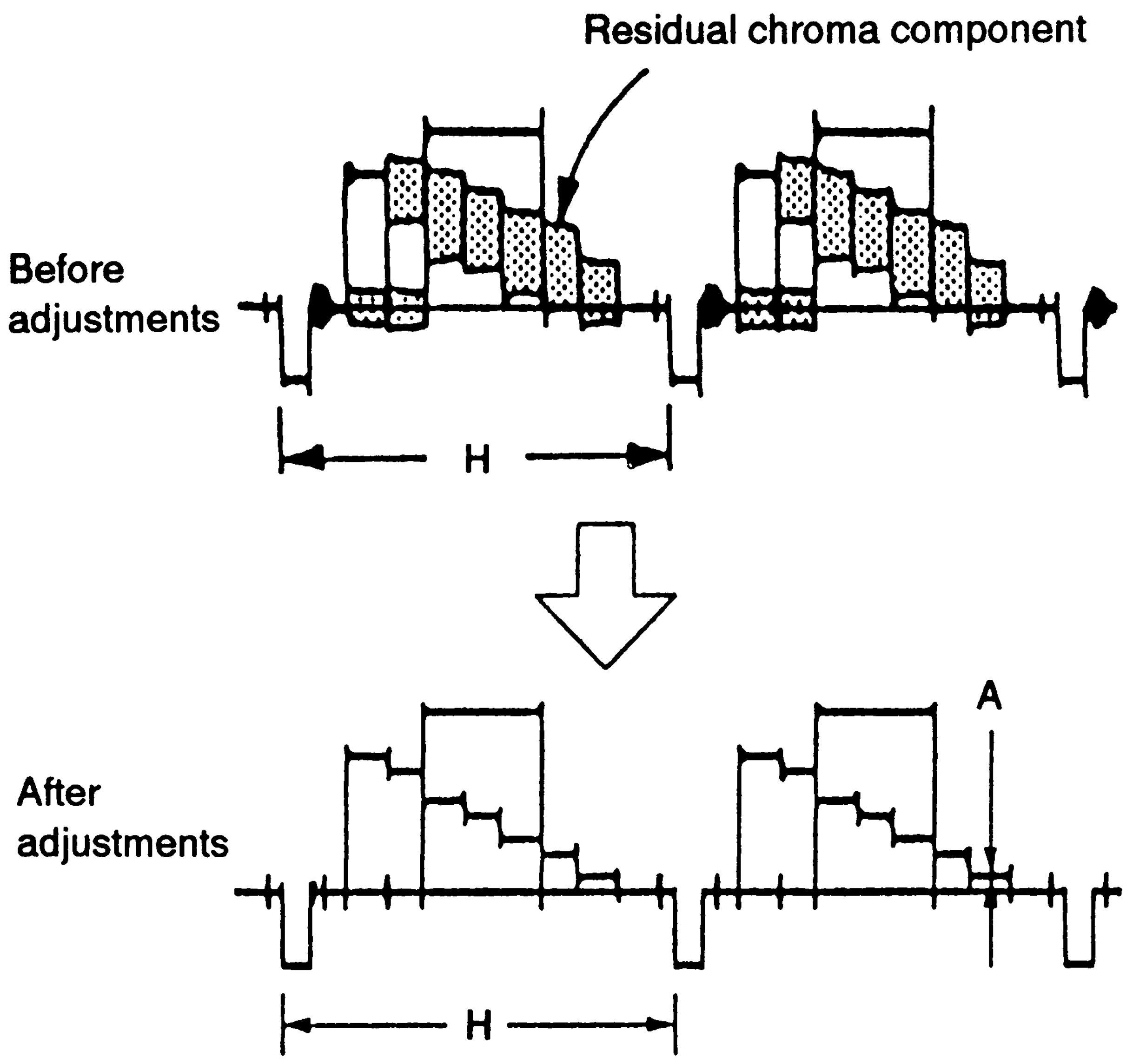


Fig. 6-3-30.

6. Emphasis Input Level Adjustment (VS board)

Y level of emphasis circuit setting. If deviated, this causes too bright or too dark image during play back after recording.

Mode	Record
Signal	Color bar (CAMERA input)
Measurement Point	Pin ⑤ of IC201 (EMPH IN) or Pin ⑤ of IC205
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	82
Specified Value	A=0.50 ± 0.01V

Note 1: The chroma signal input is not required.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 82, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

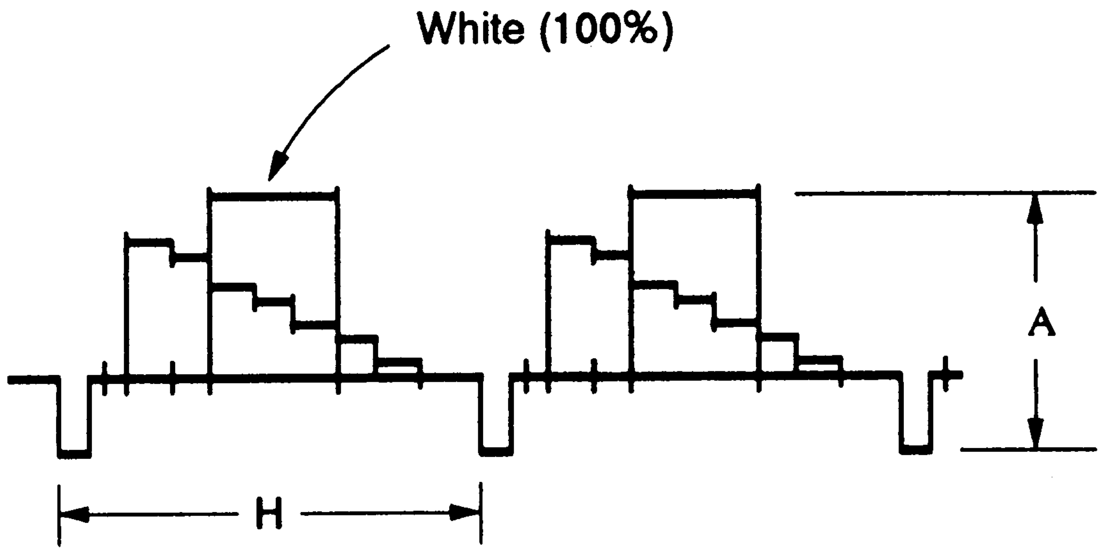


Fig. 6-3-31.

7. WHITE CLIP Check (VS board)

Mode	Record
Signal	Color bar (CAMERA input)
Measurement Point	Pin ㊴ of IC201 (Y RF OUT)
Measuring Instrument	Oscilloscope
Specified Value	Hi8 mode ME tape: A=195 ± 10% Hi8 mode Hi8 MP tape: A=190 ± 10% Normal mode MP tape: A=220 ± 10%

Note 1: The chroma signal input is not required.

Checking method:

1) Set to the record mode.
2) Set data: 00 to page: 2, address: 00.
3) Set data: 04 to page: 2, address: B0.
4) After memorizing the data of address: 9A of page: 2, set data: 01 to the address.
5) Check that the white clip level (A) satisfies the specified value.

Processing after completing adjustments

1) Set the data memorized at step 4) to address: 9A of page: 2.
2) Set data: 00 to page: 2, address: B0.

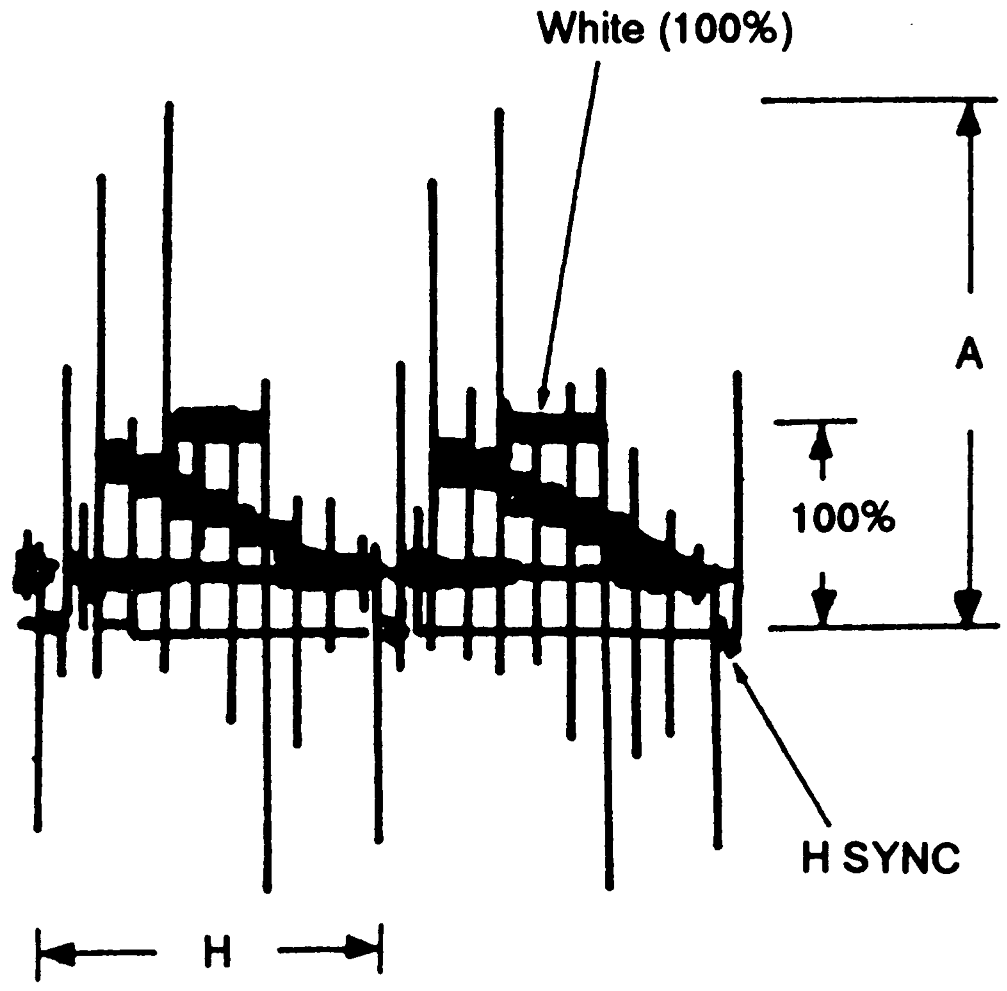


Fig. 6-3-32.

6. Emphasis Input Level Adjustment (VS board)

Y level of emphasis circuit setting. If deviated, this causes too bright or too dark image during play back after recording.

Mode	Record
Signal	Color bar (CAMERA input)
Measurement Point	Pin ⑤ of IC201 (EMPH IN) or Pin ⑤ of IC205
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	82
Specified Value	A=0.50 ± 0.01V

Note 1: The chroma signal input is not required.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 82, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

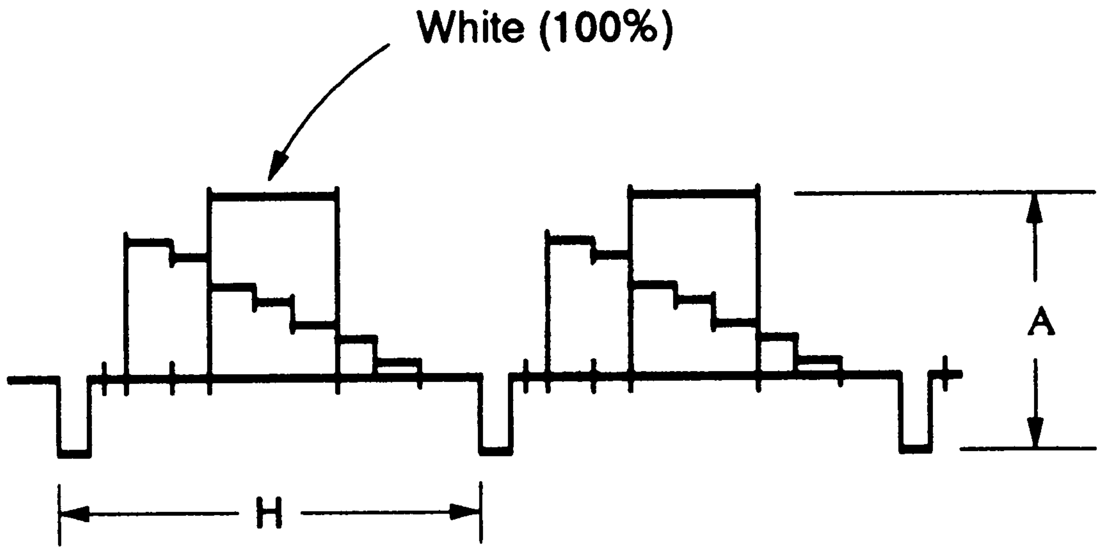


Fig. 6-3-31.

7. WHITE CLIP Check (VS board)

Mode	Record
Signal	Color bar (CAMERA input)
Measurement Point	Pin ㊴ of IC201 (Y RF OUT)
Measuring Instrument	Oscilloscope
Specified Value	Hi8 mode ME tape: A=195 ± 10% Hi8 mode Hi8 MP tape: A=190 ± 10% Normal mode MP tape: A=220 ± 10%

Note 1: The chroma signal input is not required.

Checking method:

1) Set to the record mode.
2) Set data: 00 to page: 2, address: 00.
3) Set data: 04 to page: 2, address: B0.
4) After memorizing the data of address: 9A of page: 2, set data: 01 to the address.
5) Check that the white clip level (A) satisfies the specified value.

Processing after completing adjustments

1) Set the data memorized at step 4) to address: 9A of page: 2.
2) Set data: 00 to page: 2, address: B0.

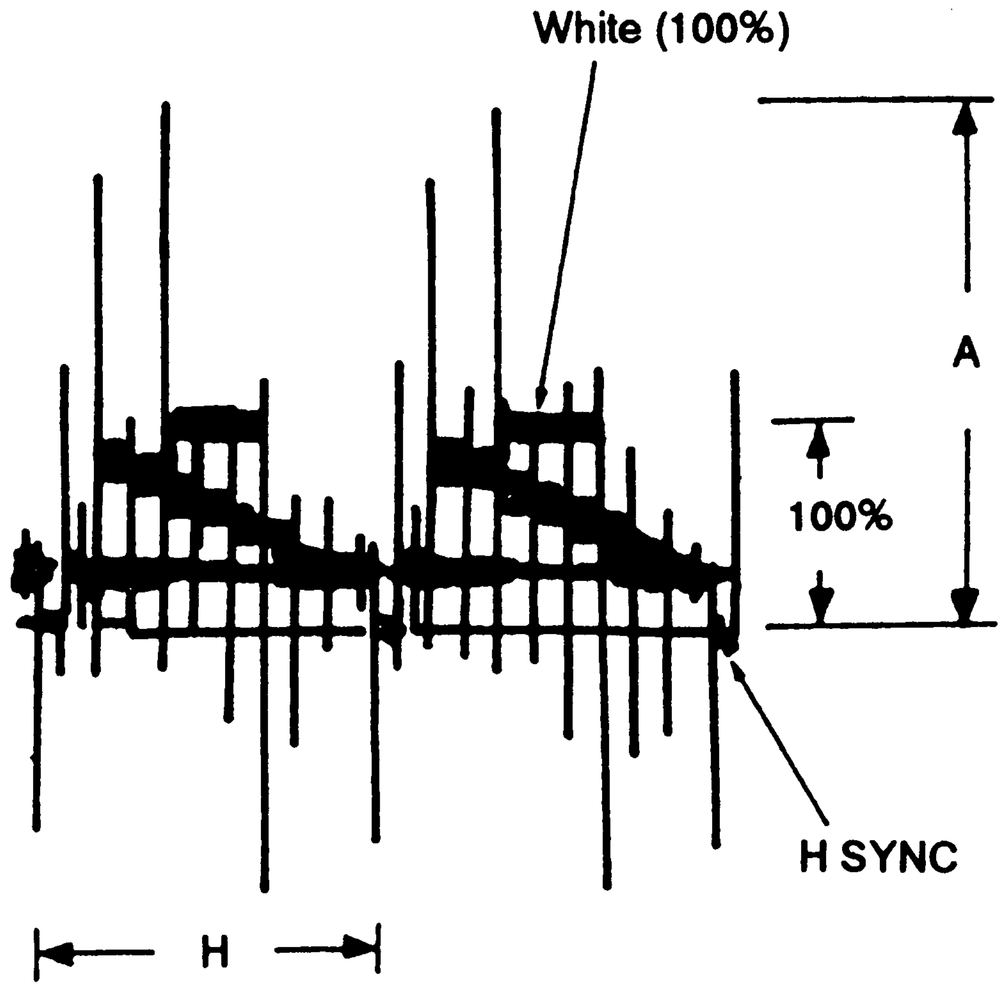


Fig. 6-3-32.

8. DARK CLIP Check (VS board)

Mode	Record
Signal	Color bar (CAMERA input)
Measurement Point	Pin ㊴ of IC201 (Y RF OUT)
Measuring Instrument	Oscilloscope
Specified Value	Hi8 mode ME tape: A=85 ± 10% Hi8 mode Hi8 MP tape: A=80 ± 10% Normal mode MP tape: A=100 ± 10%

Note 1: The chroma signal input is not required.

Checking method:

1) Set to the record mode.
2) Set data: 00 to page: 2, address: 00.
3) Set data: 04 to page: 2, address: B0.
4) After memorizing the data of address: 9A of page: 2, set data: 01 to the address.
5) Check that the dark clip level (A) satisfies the specified value.

Processing after completing adjustments

1) Set the data memorized at step 4) to address: 9A of page: 2.
2) Set data: 00 to page: 2, address: B0.

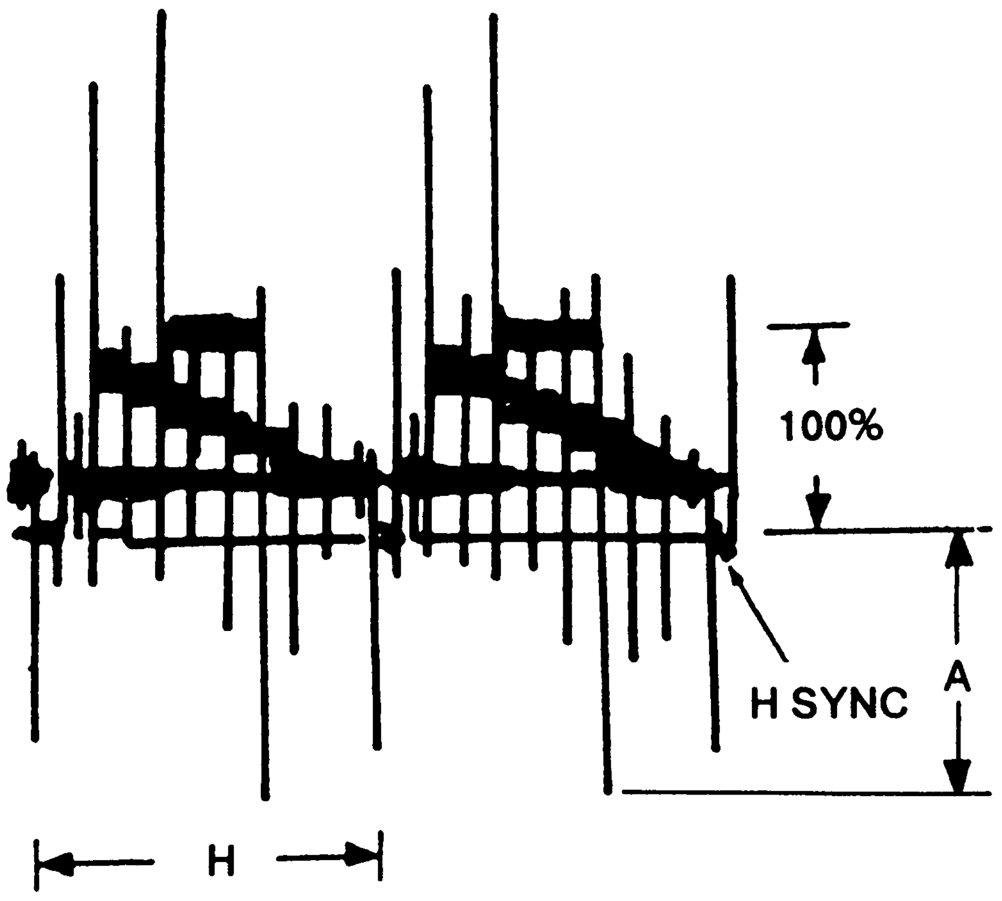


Fig. 6-3-33.

9. DE EMPH Level Adjustment (VS board)

De-emphasis input level setting. If deviated, this causes excessive brightness or darkness.

Mode	Playback
Signal	Alignment tape: For checking operations Color bar section Normal mode : WR5-5NSP Hi8 mode : WR5-8NSE
Measurement Point	Pin ⑰ of IC201 (DL IN 2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	86, 87
Specified Value	A=0.50 ± 0.01V

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Playback the color bar section of the normal mode alignment tape (WR5-5NSP).
3) Change the data of page: D, address: 87, and adjust so that the Y signal level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Playback the color bar section of the Hi8 mode alignment tape (WR5-8NSE).
6) Change the data of page: D, address: 86 and adjust so that the Y signal level (A) becames specified value.
7) Press the PAUSE button of the adjusting remote commander.
8) Perform "PB Y OUT Level adjustment".

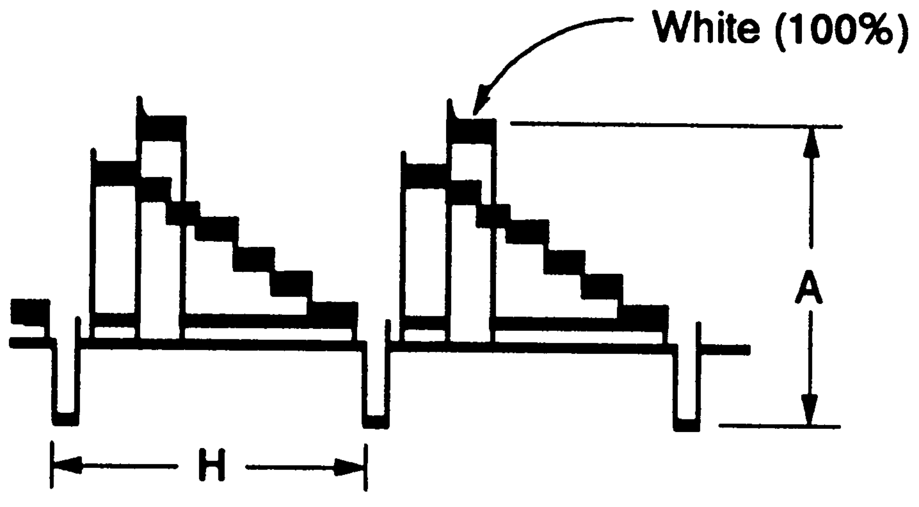


Fig. 6-3-34.

10. PB Y OUT Level Adjustment (VS board)

PB LINE OUT Y level setting. If deviated, this causes too bright or too dark picture.

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-8NSE) Color bar section
Measurement Point	Pin ② of CN201 (Y IN/OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	83
Specified Value	A=1.0 ± 0.05V

Note 1: Connect Pin ② of CN201 and Pin ③ of CN201 (S-Y GND) with a 75Ω resistor.
(Part code: 1-247-804-11)

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 83, and adjust so that the video signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

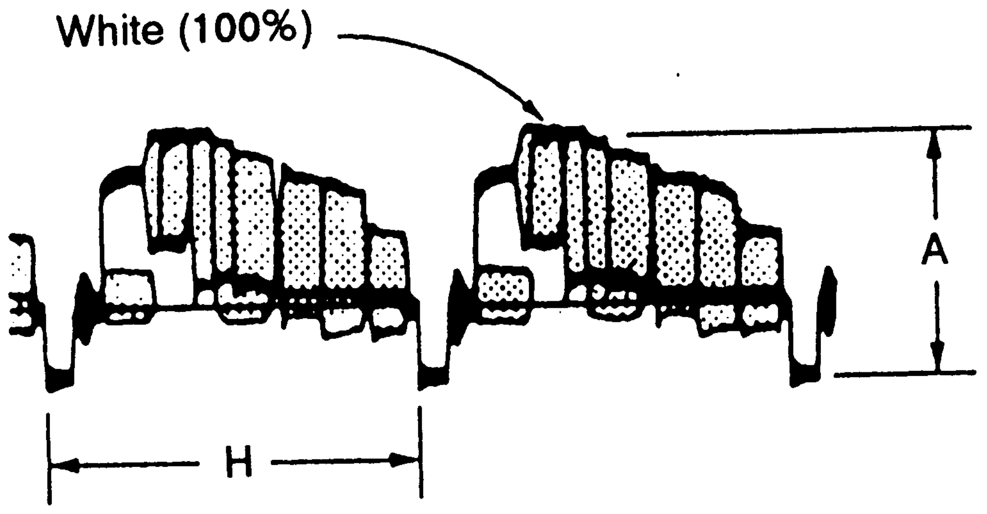


Fig. 6-3-35.

11. Normal Mode Y FM Carrier Frequency Adjustment (VS board)

Normal mode FM carrier frequency of REC Y setting. If deviated, this caused blurred played back picture or deteriorated resolution.

Mode	Record
Signal	No signal (CAMERA input)
Measurement Point	Pin ㊴ of IC201 (Y RF OUT)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	75
Specified Value	4.385 ± 0.01 MHz

Adjusting method:

1) Insert a normal MP type tape.
2) Set data: 01 to page: 1, address: 00.
3) Change the data of page: D, address: 75, and adjust so that the Y FM carrier frequency becomes the specified value.
4) Press the PAUSE button of the adjusting remote commander.

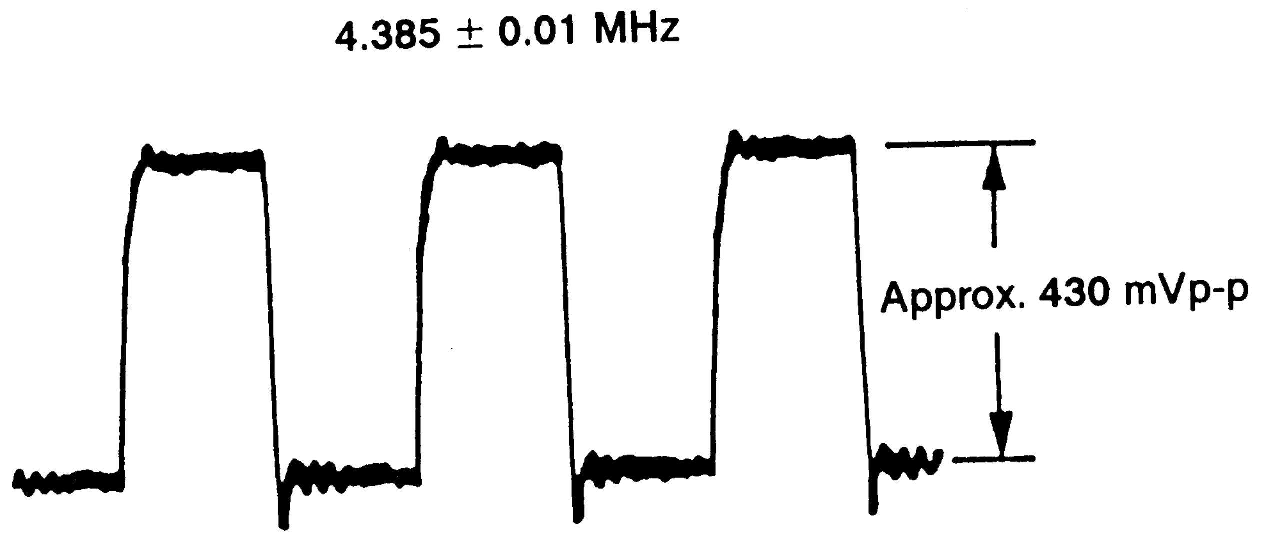


Fig. 6-3-36.

12. Normal Mode Y FM Deviation Adjustment (VS board)

Normal mode FM deviation of REC Y setting. If deviated, this causes too bright/dark image, or marked occurrence of black picture or deteriorated resolution.

Mode	Record and playback
Signal	Color bar (CAMERA input)
Measurement Point	Pin ⑰ of IC201 (DL IN 2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	77
Specified Value	A=0.50 ± 0.01V

Note 1: Check that "Emphasis Input Level Adjustment", have been completed.

Note 2: The chroma signal input is not required.

Adjusting method:

1) Insert a normal MP type tape.
2) Set data: 01 to page: 1, address: 00.
3) Record the color bar signal.
4) Playback the recorded signal.
5) Check the playback signal level (A).
   Specification:A=0.50 ± 0.01V
6) If the specification is not satisfied, change the data of page: D, address: 77, and repeat steps 3) to 5).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When bigger than the specified value	Decrease

7) Press the PAUSE button of the adjusting remote commander.
8) Perform "Normal Mode Y FM Carrier Frequency Adjustment".

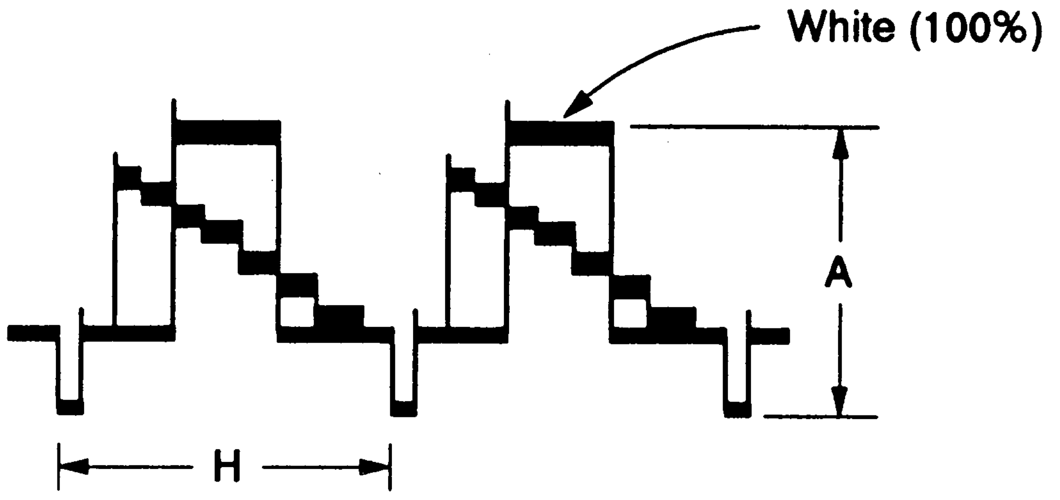


Fig. 6-3-37.

13. Hi8 Mode Y FM Carrier Frequency Adjustment (VS board)

Hi8 mode FM carrier frequency of REC Y setting. If deviated, this caused blurred played back picture or deteriorated resolution.

Mode	Record
Signal	No signal (CAMERA input)
Measurement Point	Pin ㊴ of IC201 (Y RF OUT)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	74
Specified Value	6.000 ± 0.01 MHz

Adjusting method:

1) Insert a ME type tape.
2) Set data: 01 to page: 1, address: 00.
3) Change the data of page: D, address: 74, and adjust so that the Y FM carrier frequency becomes the specified value.
4) Press the PAUSE button of the adjusting remote commander.

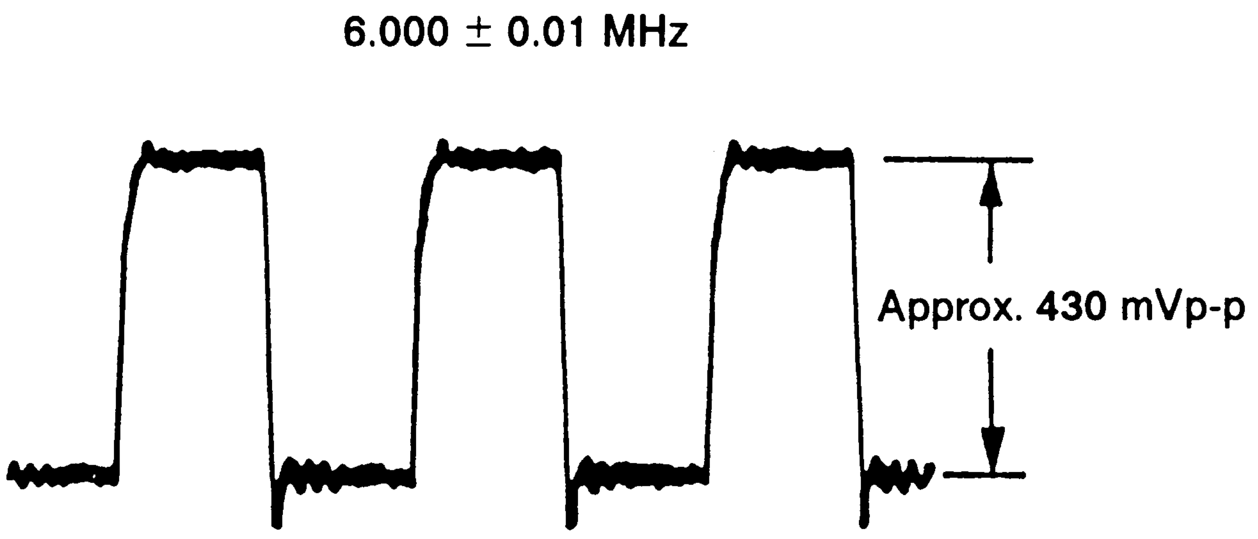


Fig. 6-3-38.

10. PB Y OUT Level Adjustment (VS board)

PB LINE OUT Y level setting. If deviated, this causes too bright or too dark picture.

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-8NSE) Color bar section
Measurement Point	Pin ② of CN201 (Y IN/OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	83
Specified Value	A=1.0 ± 0.05V

Note 1: Connect Pin ② of CN201 and Pin ③ of CN201 (S-Y GND) with a 75Ω resistor.
(Part code: 1-247-804-11)

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 83, and adjust so that the video signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

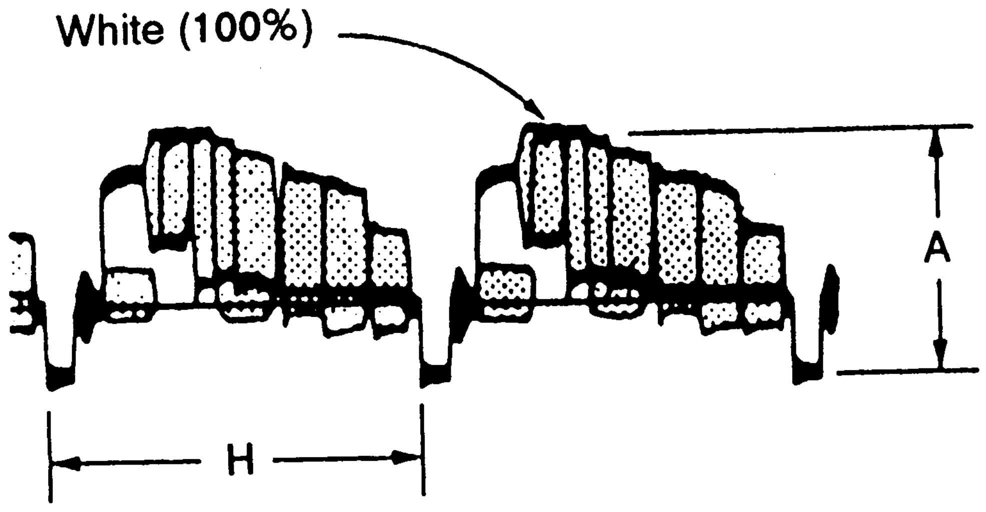


Fig. 6-3-35.

11. Normal Mode Y FM Carrier Frequency Adjustment (VS board)

Normal mode FM carrier frequency of REC Y setting. If deviated, this caused blurred played back picture or deteriorated resolution.

Mode	Record
Signal	No signal (CAMERA input)
Measurement Point	Pin ㊴ of IC201 (Y RF OUT)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	75
Specified Value	4.385 ± 0.01 MHz

Adjusting method:

1) Insert a normal MP type tape.
2) Set data: 01 to page: 1, address: 00.
3) Change the data of page: D, address: 75, and adjust so that the Y FM carrier frequency becomes the specified value.
4) Press the PAUSE button of the adjusting remote commander.

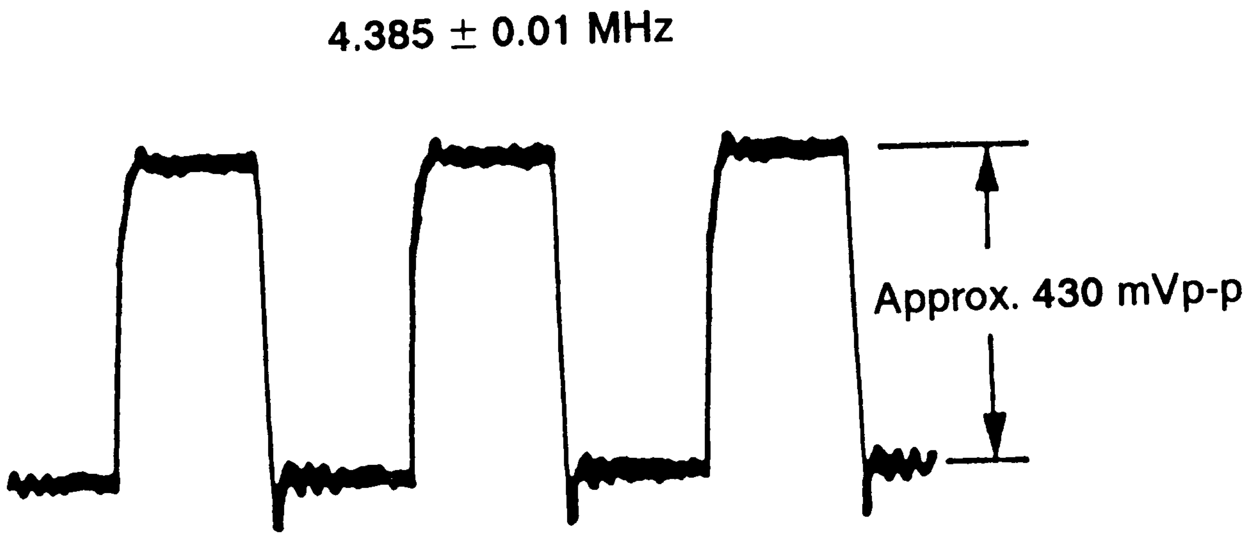


Fig. 6-3-36.

14. Hi8 Mode Y FM Deviation Adjustment (VS board)

Hi8 mode FM deviation of REC Y setting. If deviated, this causes too bright/dark image, or marked occurrence of black picture or deteriorated resolution.

Mode	Record and playback
Signal	Color bar (CAMERA input)
Measurement Point	Pin ⑰ of IC201 (DL IN 2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	76
Specified Value	A=0.50 ± 0.01V

Note 1: Check that "Emphasis Input Level Adjustment", have been completed.

Note 2: The chroma signal input is not required.

Adjusting method:

1) Insert a ME type tape.
2) Set data: 01 to page: 1, address: 00.
3) Record the color bar signal.
4) Playback the recorded signal.
5) Check the playback signal level (A).
   Specification:A=0.50 ± 0.01V
6) If the specification is not satisfied, change the data of page: D, address: 76, and repeat steps 3) to 5).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When bigger than the specified value	Decrease

7) Press the PAUSE button of the adjusting remote commander.
8) Perform "Hi8 Mode Y FM Carrier Frequency Adjustment".

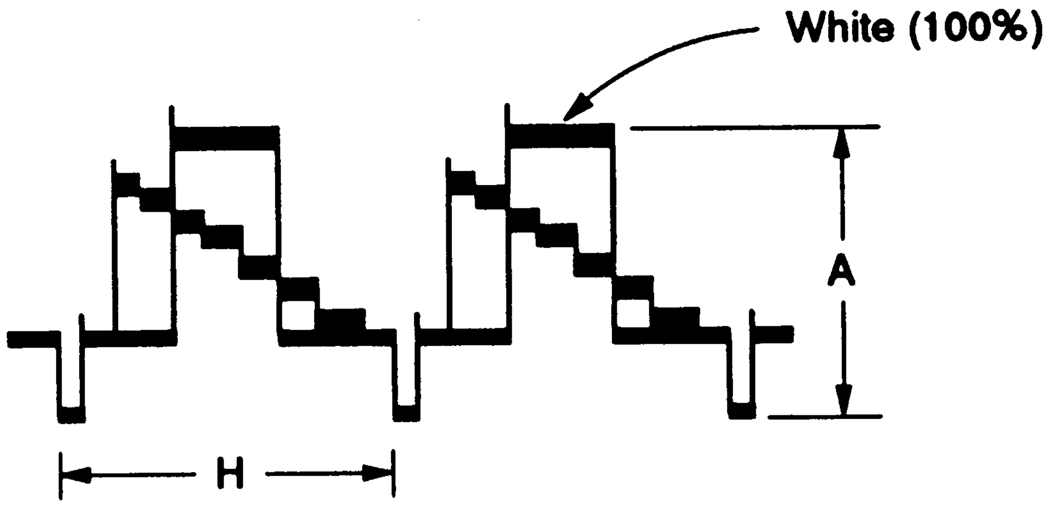


Fig. 6-3-39.

15. Chroma Emphasis Adjustment 1 (VS board)

Emphasis center frequency setting. If deviated, this causes unnatural color.

Mode	Record
Signal	Color bar (CAMERA input)
Measurement Point	Pin ⑧ of IC201 (REC C OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	80, 81
Specified Value	Minimum fo component

Adjusting method:

1) Set to the record mode.
2) Set data: 01 to page: 1, address: 00.
3) Set data: 00 to page: 2, address: 00.
4) Set data: 04 to page: 2, address: B0.
5) After memorizing the data of address: 9A of page: 2, set data: 02 to the address.
6) Change the data of page: D, address: 80, and adjust so that the amplitude of the latter section of the chroma signal (red section) becames minimum.
7) Press the PAUSE button of the adjusting remote commander.
8) Set the same data as address: 80 of page: D to address: 81 of page D.
9) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

1) Set the data memorized at step 5) to address: 9A of page: 2.
2) Set data: 00 to page: 2, address: B0.

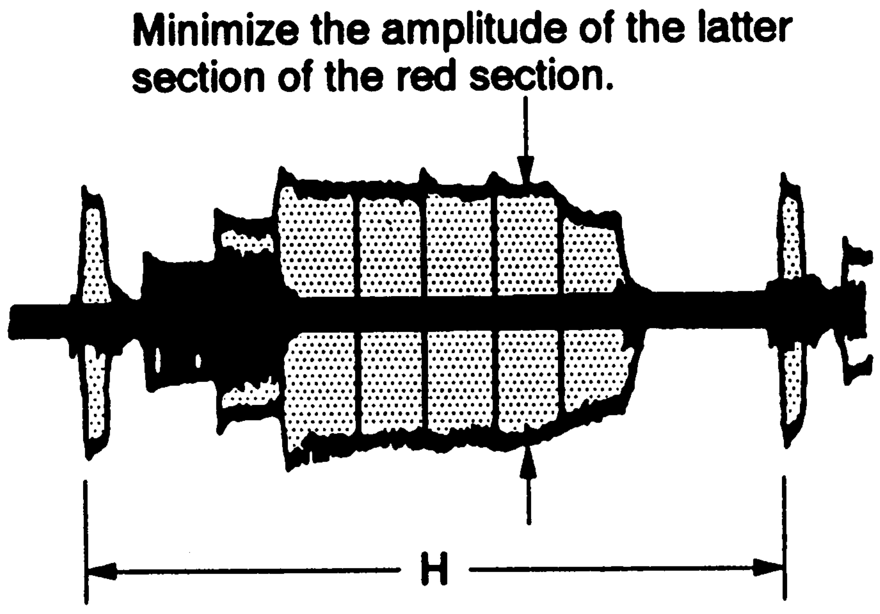

Minimize the amplitude of the latter section of the red section.
H

Fig. 6-3-40.

16. Chroma Emphasis Adjustment 2 (VS board)

Emphasis center frequency setting. If deviated, this causes unnatural color.

Mode	Playback
Signal	Alignment tape: For checking operations Color bar section
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	D
Adjustment Address	81, 80
Specified Value	The path from the blue luminance point to black luminance point should be a straight line.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 81, and adjust so that the path from the blue luminance point to black luminance point becames a straight line.
3) Press the PAUSE button of the adjusting remote commander.
4) Set the same data as address: 81 of page: D to address: 80 of page: D.
5) Press PAUSE button of the adjusting remote commander.

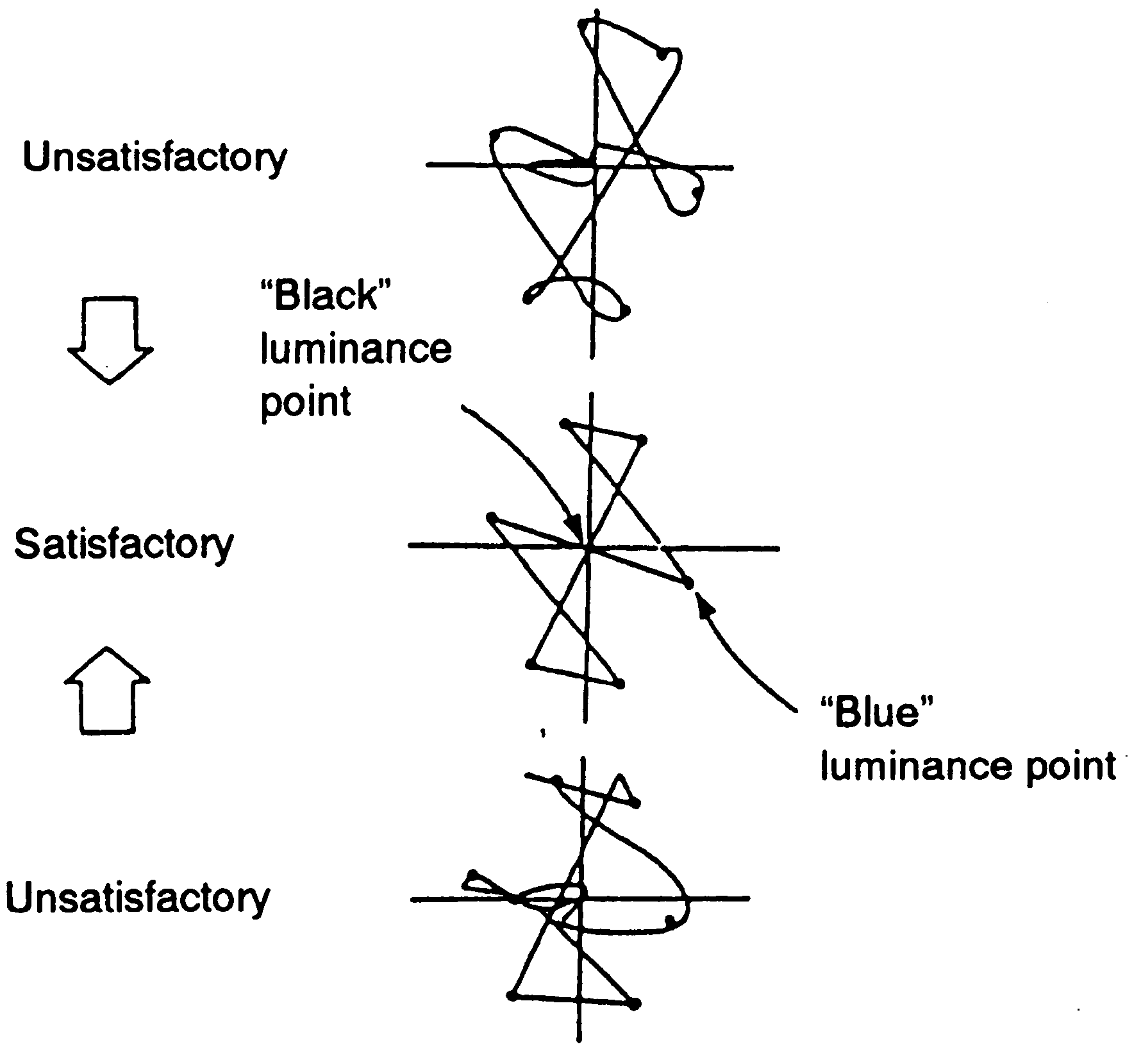


Fig. 6-3-41.

17. Comb Filter Fine Adjustment (VS board)

Set the level and phase of the 1H delayed signal for the comb filter. If deviated, this causes marked occurrence of beets in played back picture.

Mode	Playback
Signal	Alignment tape: For checking operations Color bar section
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	D
Adjustment Address	71, 84
Specified Value	Minimum color luminance point movement when the "Edit" switch is turned on/off

Note 1: Turn the edit ON/OFF at the menu screen.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Minimize the movements of the color luminance point when the edit is on/off with the data of page: D, address: 84 changed.
3) Change the data of page: D, address: 71 and minimize the movements of the color luminance point when the edit is on/off
4) Press the PAUSE button of the adjusting remote commander.
5) Repeat steps 2) to 4).

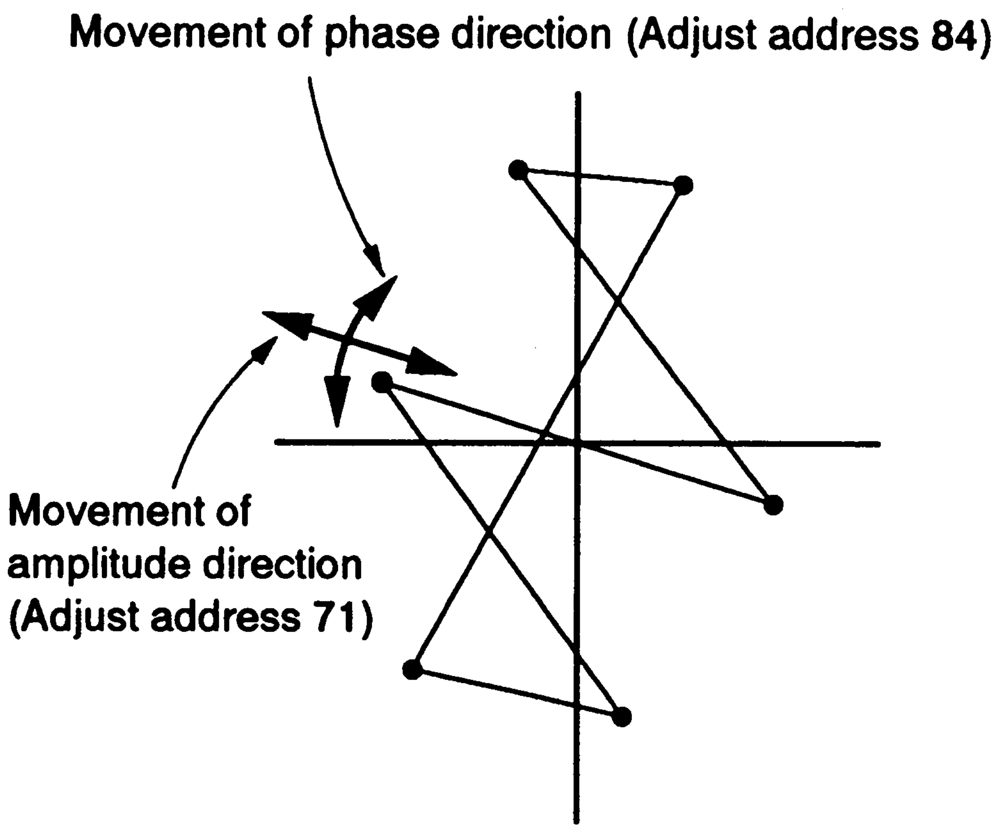

Movement of phase direction (Adjust address 84)
Movement of amplitude direction (Adjust address 71)

Fig. 6-3-42.

18. REC Y Level Adjustment (VS board)

Recording level of luminance signal setting. If deviated, this causes black stretch over modulation noise or color shade.

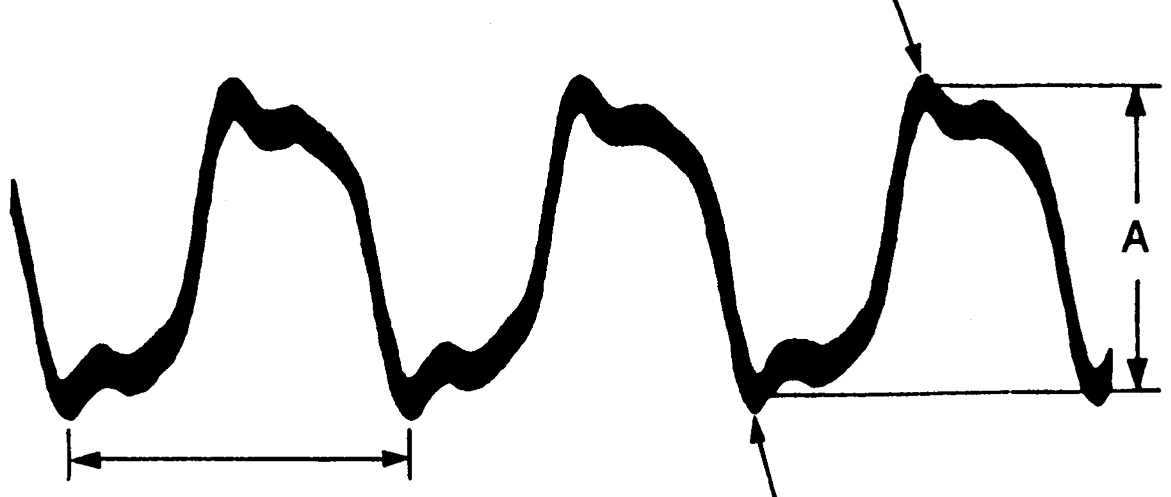
Mode	Record
Signal	No signal
Measurement Point	Pin ⑥ of CN102 (REC 2)
Measuring Instrument	Oscilloscope Board width limit: 20 MHz
Adjustment Page	D
Adjustment Address	44, 40, 45, 41, 47, 43, 46, 42
Specified Value	A=125 ± 5 mVp-p

Note: Use a ME type tape.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) After memorizing the data of address: 3A of page: D, set data: FF to the address.
3) Set data: FF to page: D, address: 40 and press the PAUSE button of the adjusting remote commander.
4) Change the data of page: D, address: 44, and adjust so that REC Y level (A) becomes the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Read the data of page: D, address: 44 and this data is named D44.
7) Convert D44 to decimal notation, and obtain D44´.
   (Refer to Table 6-1-3. "Hexadecimal notation – decimal notataion conversion table")
8) Calculate D45´, D46´ and D47´ using following equations (decimal notation calculation).
   D45´=D44´+ 5
   D46´=D44´+ 4
   D47´=D44´– 3
9) Convert D45´, D46´ and D47´ to hexadecimal notation and obtain D45, D46 and D47.
10) Set data to address: 40, 41, 42, 43, 45, 46 and 47 of page: D as shown in following table.
   (Be sure to press the PAUSE button of the adjusting remote control unit after setting each data.)
11) Set the data memorized at step 2) to address: 3A of page: D and press the PAUSE button of the adjusting remote commander.

The center of the luminance line width of this section.



Approx. 0.17 μsec

The center of the luminance line width of this section.

Fig. 6-3-43.

Address	Data
40	D44
41	D45
42	D46
43	D47
45	D45
46	D46
47	D47

19. REC L Adjustment (VS board)

Set the recording levels of the REC AFM signal and REC ATF signal. If the level is too low, the audio S/N will deteriorate, tracking will not be stable, or SP/LP will not be discriminated properly. If too high, color beets will be produced on the self-recording/playback image.

Mode	Record
Signal	No signal (VIDEO input)
Measurement Point	Pin ⑥ of CN102 (REC 2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	3A, 38, 3B, 39
Specified Value	A=6.8 ± 1.0 mVp-p

Note 1: Use a ME type tape.

Note 2: AU board is required for this adjustment.

Note 3: Do not insert any plug into the right audio input terminal.

Connection:

1) Disconnect HE board.
2) Connect Pin ⑤ of IC508 and GND with a 0.01 μF capacitor. (Parts code: 1-101-004-00)

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 3A, and adjust so that the REC AFM signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Read the data of page: D, address: 3A, and this data is named D3A.
5) Set data: D3A to address: 38 of page D.
6) Press the PAUSE button of the adjusting remote commander.
7) Convert D3A to decimal notation, and obtain D3A′. (Refer to Table 6-1-3. "Hexadecimal notation-decimal notation conversion table")
8) Culculate D3B′ using following equation (decimal notation calculation).
   D3B′=D3A′+ 10
9) Convert D3B′ to hexadecimal notation, and obtain D3B.
10) Set data: D3B to address: 3B of page D.
11) Press the PAUSE button of the adjusting remote commander.
12) Set data: D3B to address: 39 of page D.
13) Press the PAUSE button of the adjusting remote commander.
14) Perform "REC CHROMA Level Adjustment".

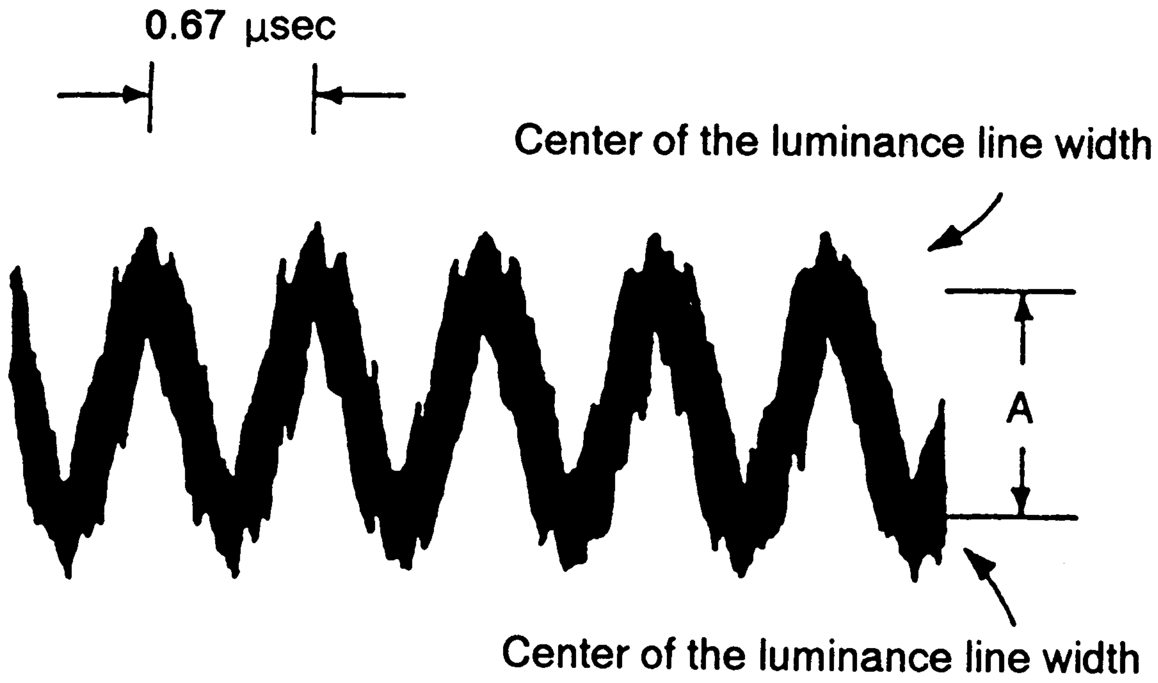

0.67 μsec
Center of the luminance line width
A
Center of the luminance line width

Fig. 6-3-44.

20. REC CHROMA Level Adjustment (VS board)

Set REC CHROMA signal level. If it is lower than its normal level, chroma signal noise in played back picture will increase. If it is set higher, Y signal noises will increase and white modulation noises will be prodused.

Mode	Record
Signal	Color bar (CAMERA input)
Measurement Point	Pin ⑥ of CN102 (REC 2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	30, 31, 32, 33, 34, 35, 36, 37
Specified Value	A=28 ± 3 mVp-p

Note 1: Use a ME type tape.

Connection:

1) Disconnect HE board.
2) Connect Pin ⑤ of IC508 and GND with a 0.01 μF capacitor. (Parts code: 1-101-004-00)
3) Disconnect AU board.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 30, and adjust so that the REC CHROMA signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Read the data of page: D, address: 30, and this data is named D30.
5) Set data to address: 31 to 37 of page: D as shown in following table.
   (Be sure to press the PAUSE button of the adjusting remote commander after setting each data.)

Address	Data
31	D30
32	D30
33	D30
34	D30
35	D30
36	D30
37	D30

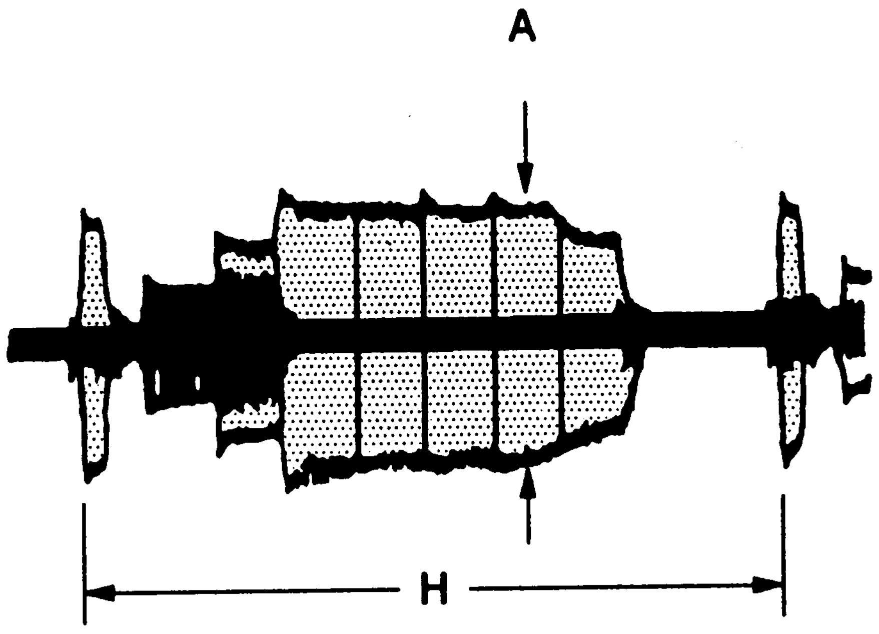


Fig. 6-3-45.

21. REC ATF Level Check (VS board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑥ of CN102 (REC 2)
Measuring Instrument	Oscilloscope
Specified Value	A=6.6 ± 1.5 mVp-p

Note 1: Use a ME type tape.

Connection:

1) Disconnect HE board.
2) Disconnect AU board.

Adjusting method:

1) Check that the REC ATF signal level (A) satisfise the specified value.

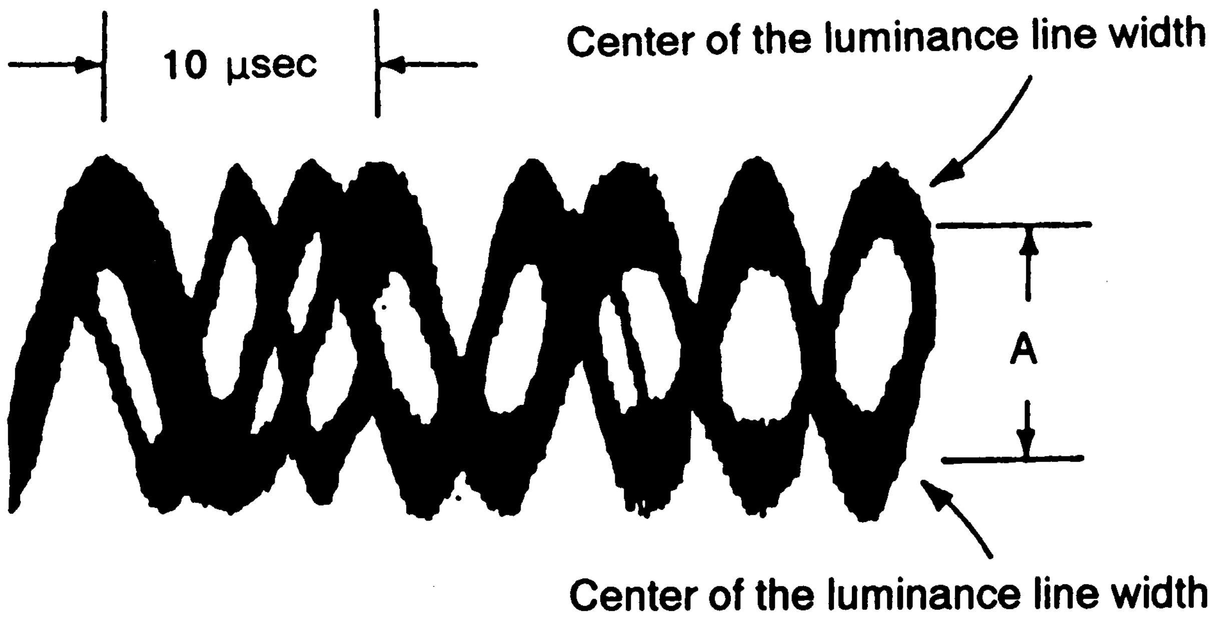
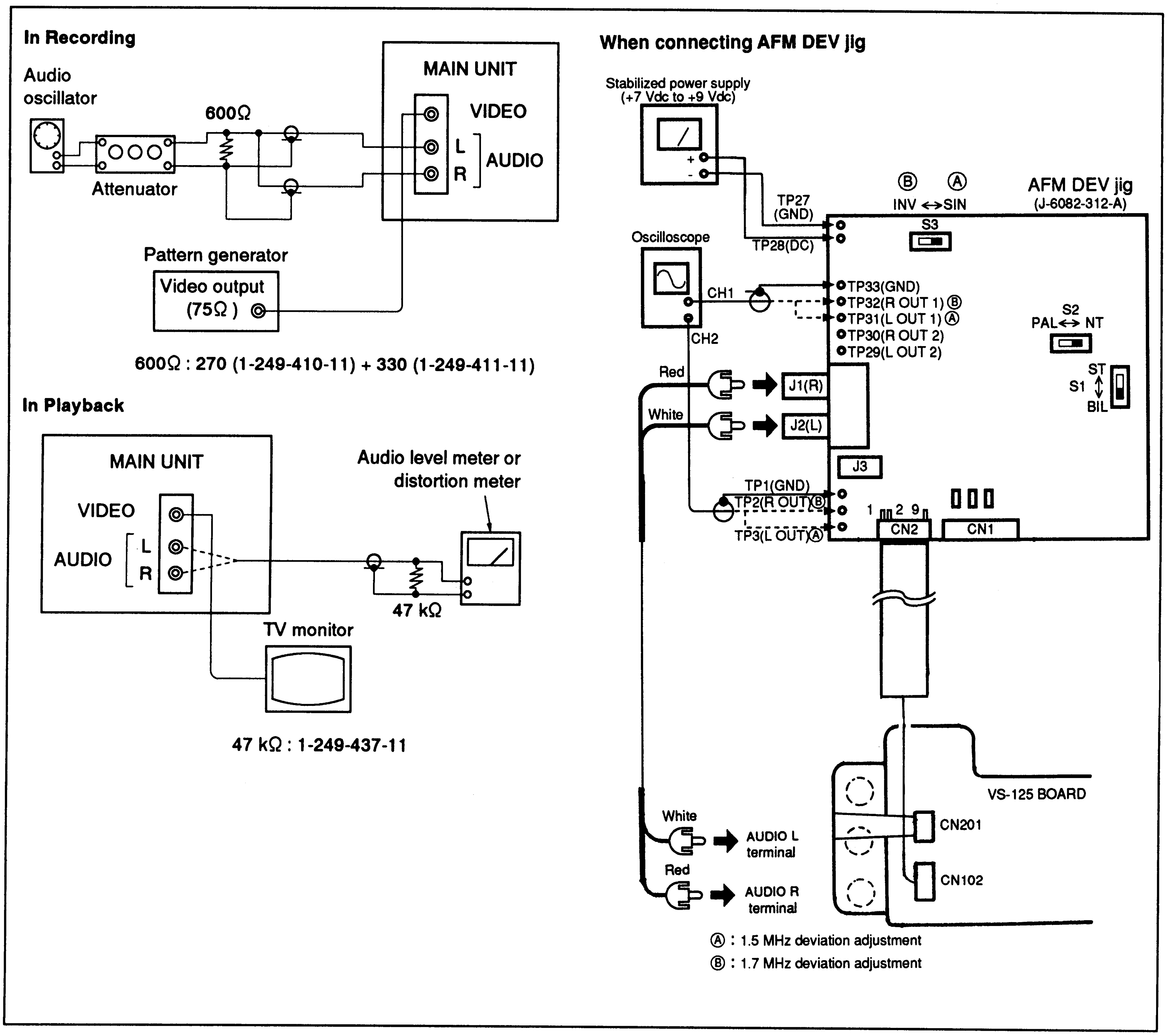

10 μsec
Center of the luminance line width
A
Center of the luminance line width

Fig. 6-3-46.

3-7. AUDIO SYSTEM ADJUSTMENT

- Perform the adjustment using the color bar signal as a video signal input for VIDEO terminal.
- Unless specified otherwise, use a normal MP tape.
- The items to be adjusted for the R channel will be indicated within the [ ], in regard to the adjusting items to be adjusted for both L and R channels.
- Set the Hi-Fi sound switch in the menu display to “stereo” position unless specified otherwise.

[Connecting the measuring instruments for the audio]
Connect the audio system measuring instruments in addition to the video system measuring instruments as shown in Fig. 6-3-47, and perform adjustments at the power switch [VTR or PLAYER] position.



600Ω : 270 (1-249-410-11) + 330 (1-249-411-11)

47 kΩ : 1-249-437-11

Ⓐ : 1.5 MHz deviation adjustment
Ⓑ : 1.7 MHz deviation adjustment

Fig. 6-3-47.

[Adjustment Procedure]

1) E-E output level check
2) 1.5 MHz deviation adjustment
3) 1.7 MHz deviation adjustment
4) BPF adjustment
5) Overall level characteristics, distortion check
6) Separation check

1. E-E Output Level Check

Mode	Record
Signal	400 Hz, -7.5 dBs, Audio input terminal (left) [right]
Measurement Point	(Headphone terminal left) [Headphone terminal right] Note
Measuring Instrument	Audio lever meter
Specified Value	-32 ± 2.5 dBs

Note: Load impedance is 8 Ω .

Checking method:

1) Check that the 400 Hz signal level satisfies the specified value.

2. 1.5 MHz Deviation Adjustment

Sets the spectrum of the L-ch (L+R/2 signal) level modulated during recording. If deviated, the crosstalk of the audio signal will occur and the audio level will drop during both playback and recording.

Mode	Recording
Signal	Input the AFM DEV jig output signal to the right and left audio input terminals
Measuring point	CH1: AFM DEV jig TP31 CH2: AFM DEV jig TP3
Measuring device	Oscilloscope ADD mode CH2 INV mode
Adjustment page	D
Adjustment address	8F
Specified value	The difference between CH1 signal and CH2 signal should be below 40 mV.

Connection

1) Connect CN2 of the AFM DEV jig to CN102 of the VS board.
2) Connect the audio output terminal (J1 and J2) of the AFM DEV jig to audio input/output terminal (R and L) of the unit.
3) Connect TP28 (DC), TP27 (GND) of the AFM DEV jig to the DC power supply (+7 Vdc to +9 Vdc).
4) Set the AFM DEV jig switches to the following positions.
   S1 ·············BIL position
   S2 ·············NT position
   S3 ·············SIN position

Adjustment Method

1) Match the vertical ranges of CH1 and CH2 of the oscilloscope to each other.
2) Set the oscilloscope to the ADD mode and CH2 to the INV (inverse) mode.
3) Set data:01 to page:1, address:00.
4) Change the data of page:D, address:8F and minimize the audio signal level difference (A).
5) Press the PAUSE button of the adjusting remote commander.

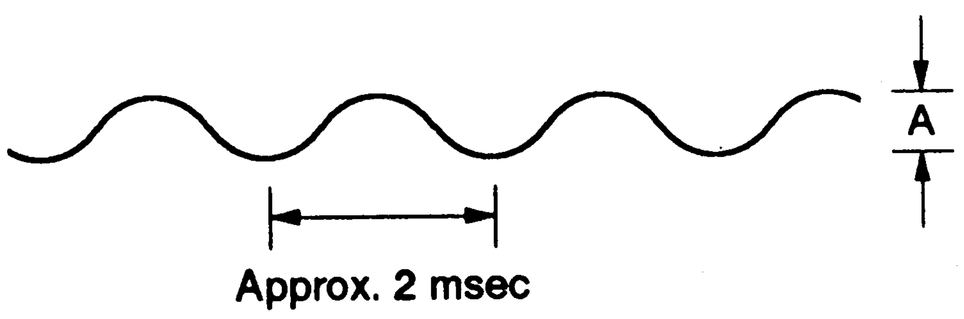


Fig. 6-3-48.

3. 1.7 MHz Deviation Adjustment

Sets the spectrum of the R-ch (L–R/2 signal) level modulated during recording. If deviated, the crosstalk of the audio signal will occur and the audio level will drop during both playback and recording.

Mode	Recording
Signal	Input the AFM DEV jig output signal to the right and left audio input terminals
Measuring point	CH1: AFM DEV jig TP32 CH2: AFM DEV jig TP2
Measuring device	Oscilloscope ADD mode CH2 INV mode
Adjustment page	D
Adjustment address	8E
Specified value	The difference between CH1 signal and CH2 signal should be below 40 mV.

Connection

1) Connect CN2 of the AFM DEV jig to CN102 of the VS board.
2) Connect the audio output terminal (J1 and J2) of the AFM DEV jig to audio input/output terminal (R and L) of the unit.
3) Connect TP28 (DC), TP27 (GND) of the AFM DEV jig to the DC power supply (+7 to +9 Vdc).
4) Set the AFM DEV adjustment tool switches to the following positions.
   S1 ············BIL position
   S2 ············NT position
   S3 ············INV position

Adjustment Method

1) Match the vertical ranges of CH1 and CH2 of the oscilloscope to each other.
2) Set the oscilloscope to the ADD mode and CH2 to the INV (inverse) mode.
3) Set data:01 to page:1, address:00.
4) Change the data of page:D, address:8E and minimize the audio signal level difference (A).
5) Press the PAUSE button of the adjusting remote commander.

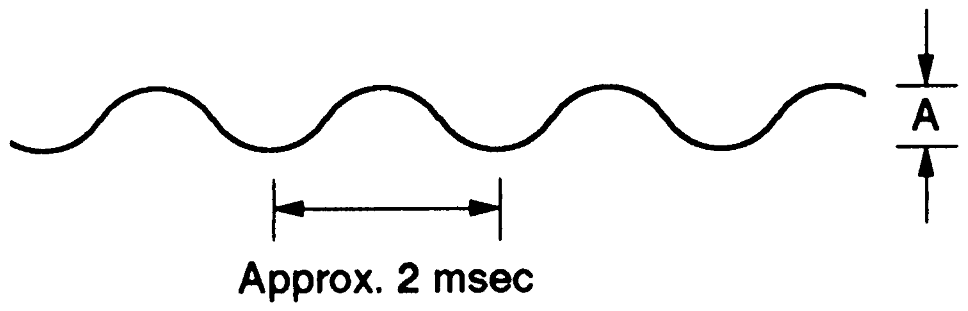


Fig. 6-3-49.

4. BPF Adjustment

Sets the BPF passing frequency so that the AFM signal can separate from the playback RF signal properly. If deviated. the mono/stereo mode will be differentiated incorrectly, and noises and distortions will increase during high volume playback.

Mode	Playback
Signal	Alignment tape: for BPF adjustment (WR5-11NS)
Measuring point	Right or left audio output terminal
Measuring device	Distortion meter
Adjustment page	D
Adjustment address	8D
Specified value	The right and left channel distortion rates should be almost the same (within ± 1%) and minimum

Adjustment Method

1) Set data:01 to page:1, address:00.
2) Set the Hi-Fi sound switch in the menu display to " $\boxed{2}$ ".
3) Change the data of page:D, address:8D and minimize the distortion rate.
4) Press the PAUSE button of the adjusting remote commander.
5) Set the Hi-Fi sound switch to " $\boxed{1}$ ".
6) Change the data of page:D, address:8D and minimize the distortion rate.
7) Press the PAUSE button of the adjusting remote commander.
8) Repeat steps 2) to 7) and set the data of address:8D so that the distortions rates when the Hi-Fi sound switch is set to " $\boxed{2}$ " and set to " $\boxed{1}$ " respectively are almost the same and minimum.
9) Press the PAUSE button of the adjusting remote commander.

5. Overall Level Characteristics, Distortion Check

Mode	Self recording/playback
Signal	400 Hz, –7.5 dBs: Audio input terminal (left) [right] No signal: Audio input terminal (right) [left]
Measurement Point	Audio output terminal (left) [right]
Measuring Instrument	Audio level meter and distortion meter
Specified Value	Level: –7.5 ± 2.5 dBs Distortion rate: Below 0.8% (Note 2)

Note: 1) The [ ] indicates the measuring point during the right channel check.
2) Value when the 200 kHz to 6 kHz band-path filter is used

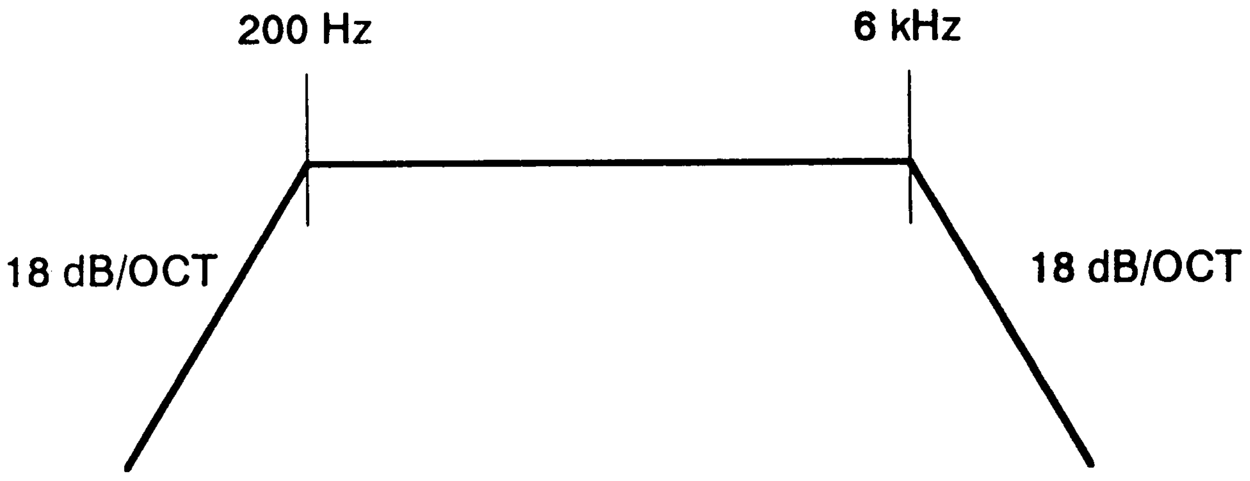


Fig. 6-3-50.

Checking method:

1) Input the 400 Hz, –7.5 dBs signal only to the audio input terminal (left) [right].
   Note: Be sure to insert the shorting plug to the terminal that was not signal input.
2) Record the signal.
3) Remove the input signal.
4) Playback the recorded section.
5) Check that the 400 Hz signal level of the audio output terminal (left) [right] is –7.5 ± 2.5 dBs, and that the distortion rate is below 0.8% (Note 2).

6. Separation Check

Mode	Self recording /playback
Signal	No signal: Audio input terminal (left) [right] 400 Hz, –7.5 dBs: Audio input terminal (right) [left]
Measurement Point	Audio output terminal (left) [right]
Measuring Instrument	Audio level meter (Use an IHF-A curve auditory correction filter)
Specified Value	Below –27.5 dBs

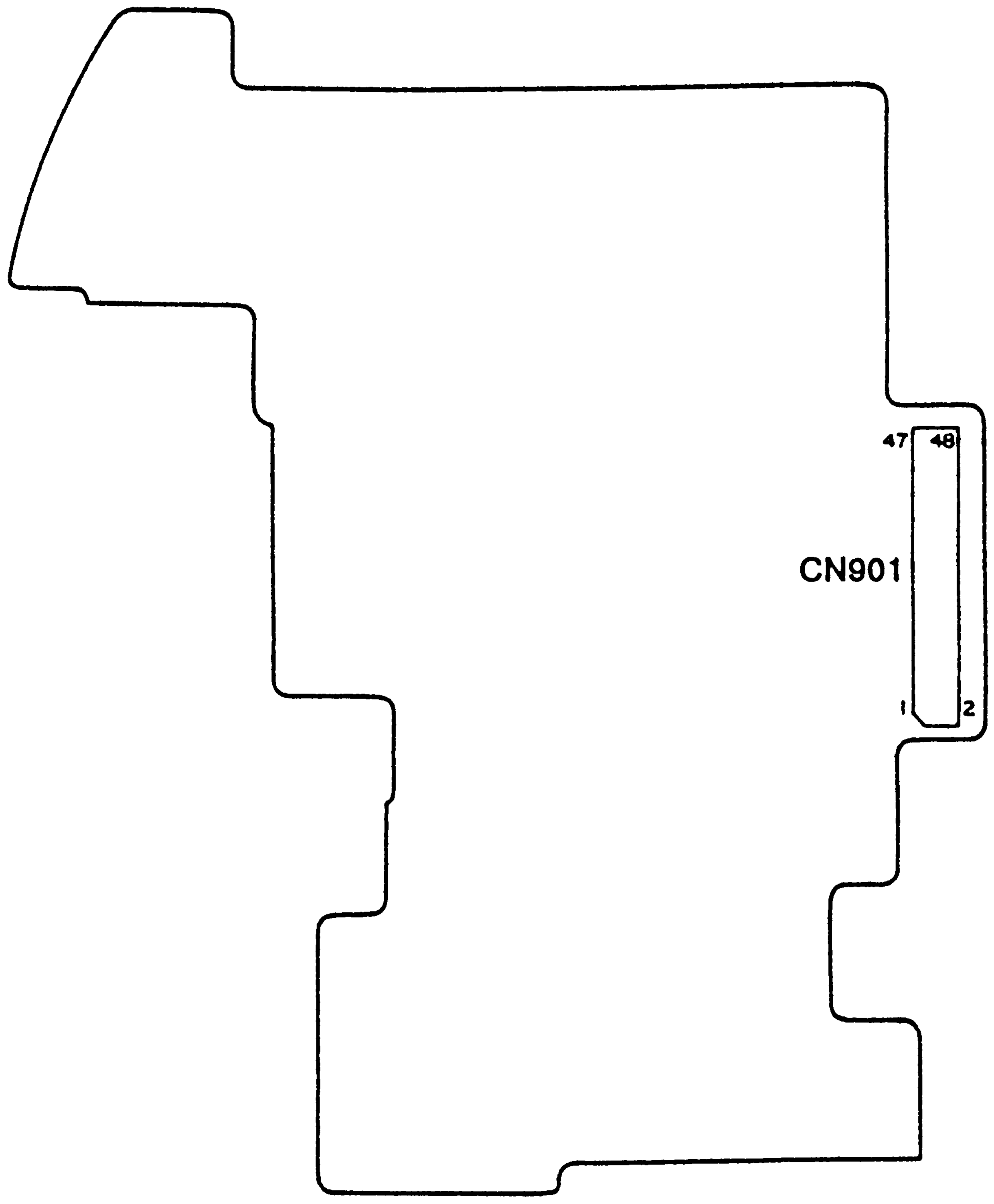
Note: The [ ] indicates the measuring point during the right channel check.

Checking method:

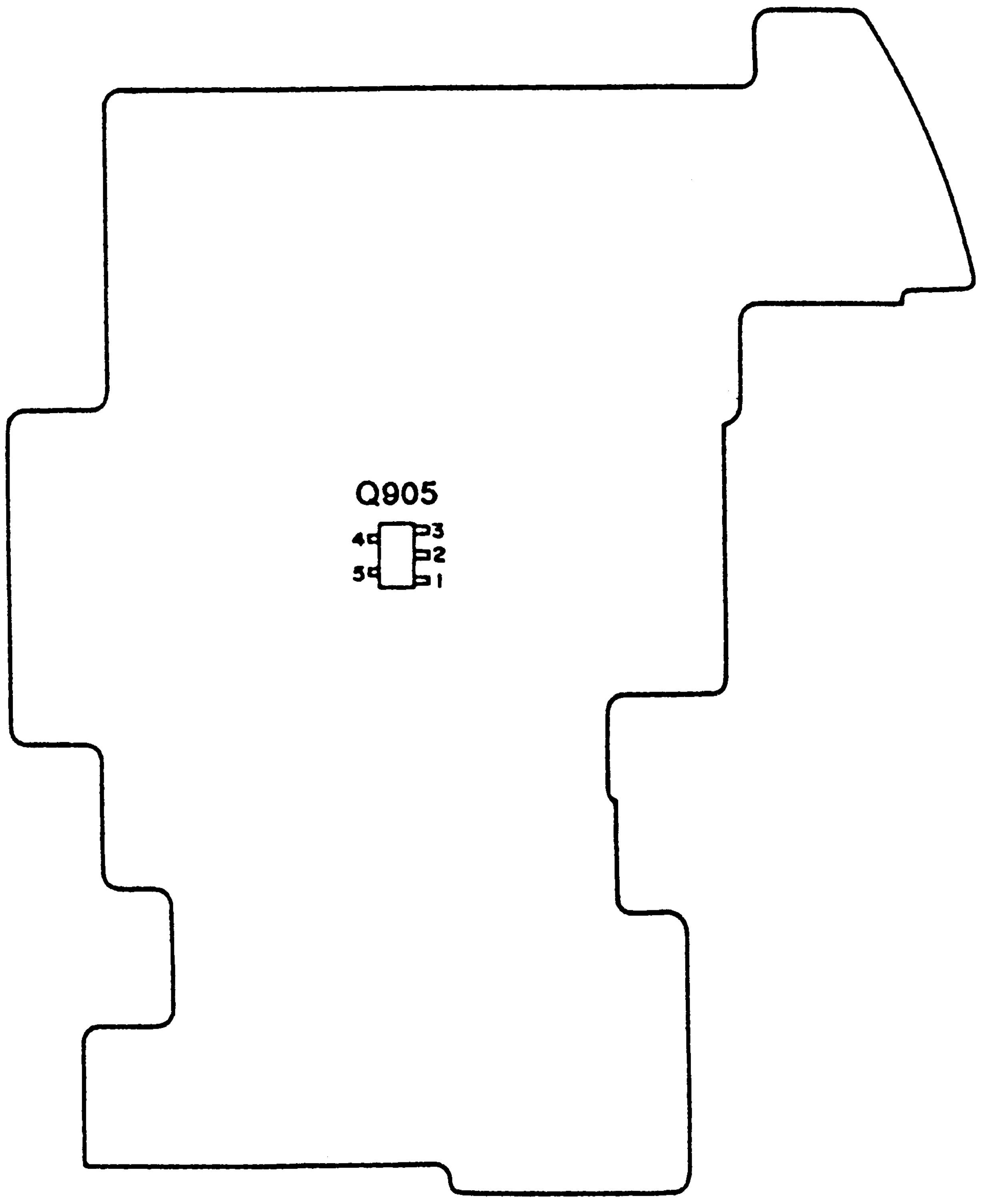
1) Insert a shorting plug into the audio input terminal (left) [right], and input a 400 Hz, –7.5 dBs signal only to the audio input terminal (right) [left].
2) Record the signal.
3) Remove the input signal.
4) Playback the recorded section.
5) Check that the cross talk level (400 Hz) of the audio output terminal (left) [right] is below –27.5 dBs.

3-8. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

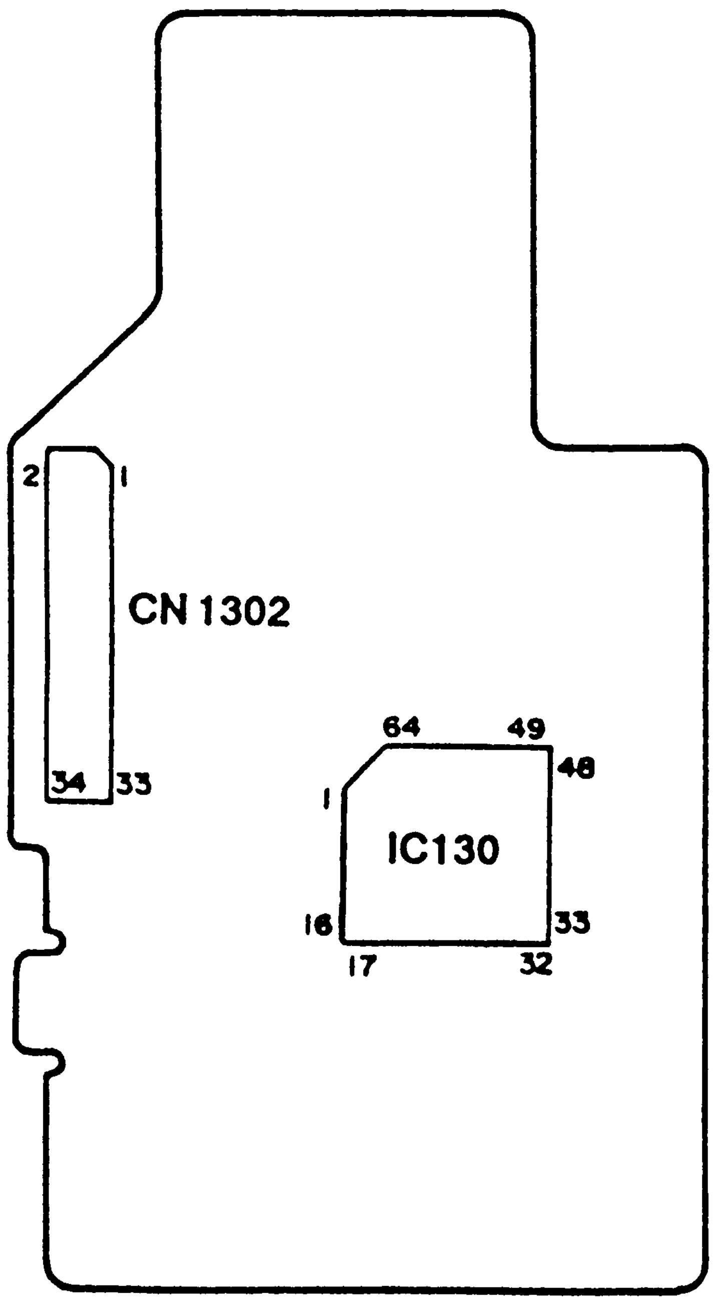
DD-78 BOARD (CONDUCTOR SIDE)



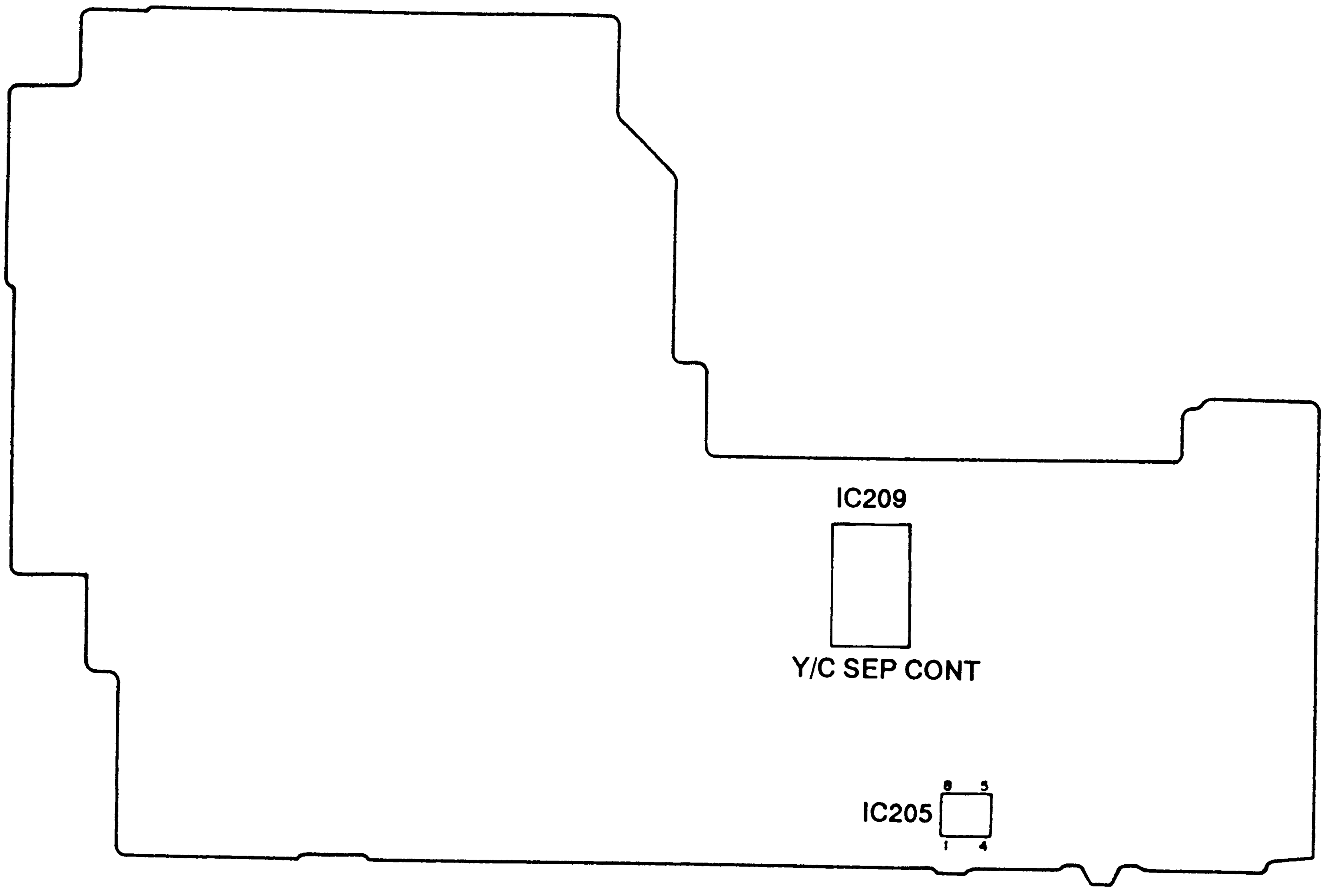
DD-78 BOARD (COMPONENT SIDE)



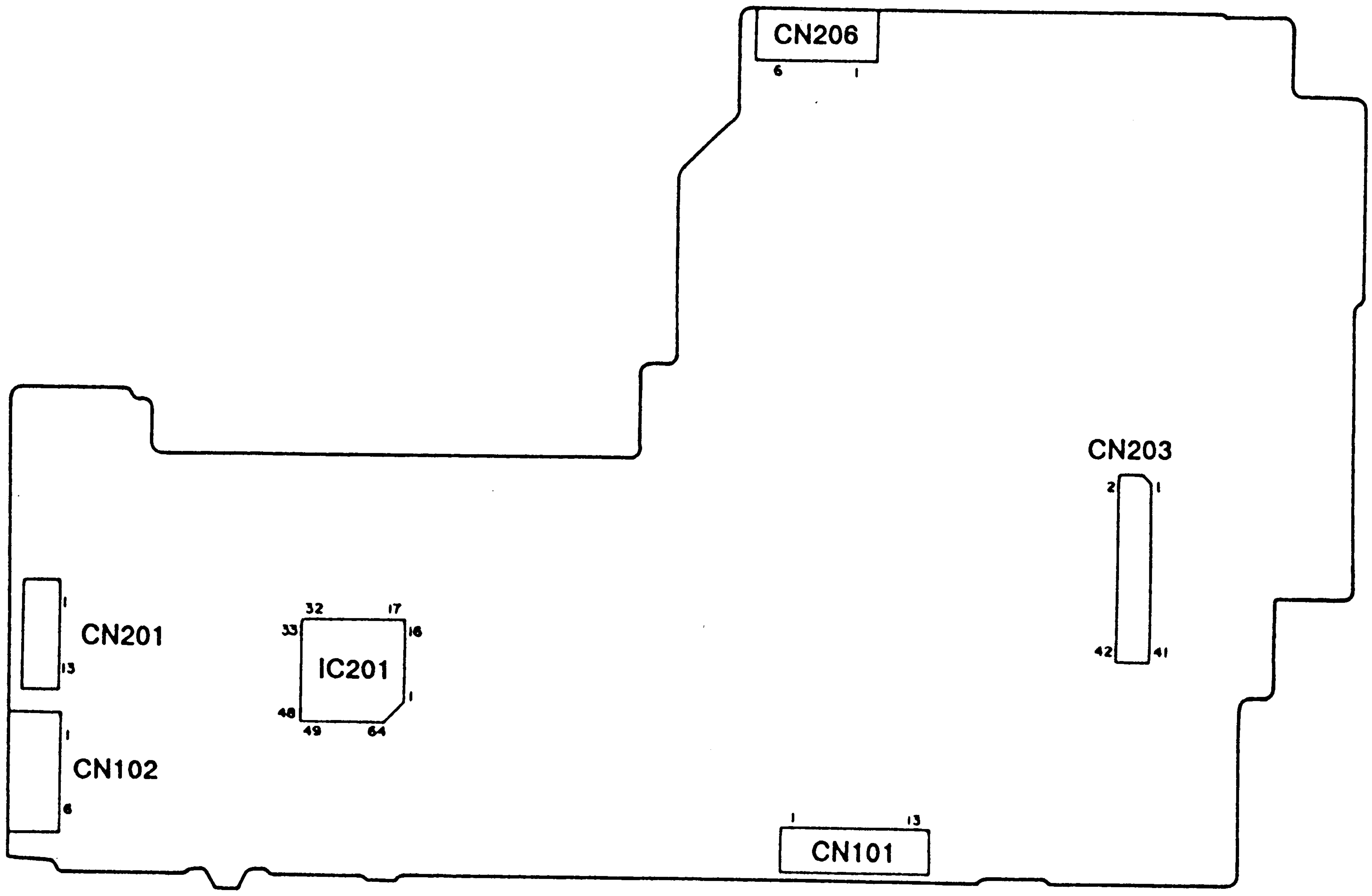
AU-184 BOARD (CONDUCTOR SIDE)



VS-125 BOARD (COMPONENT SIDE)

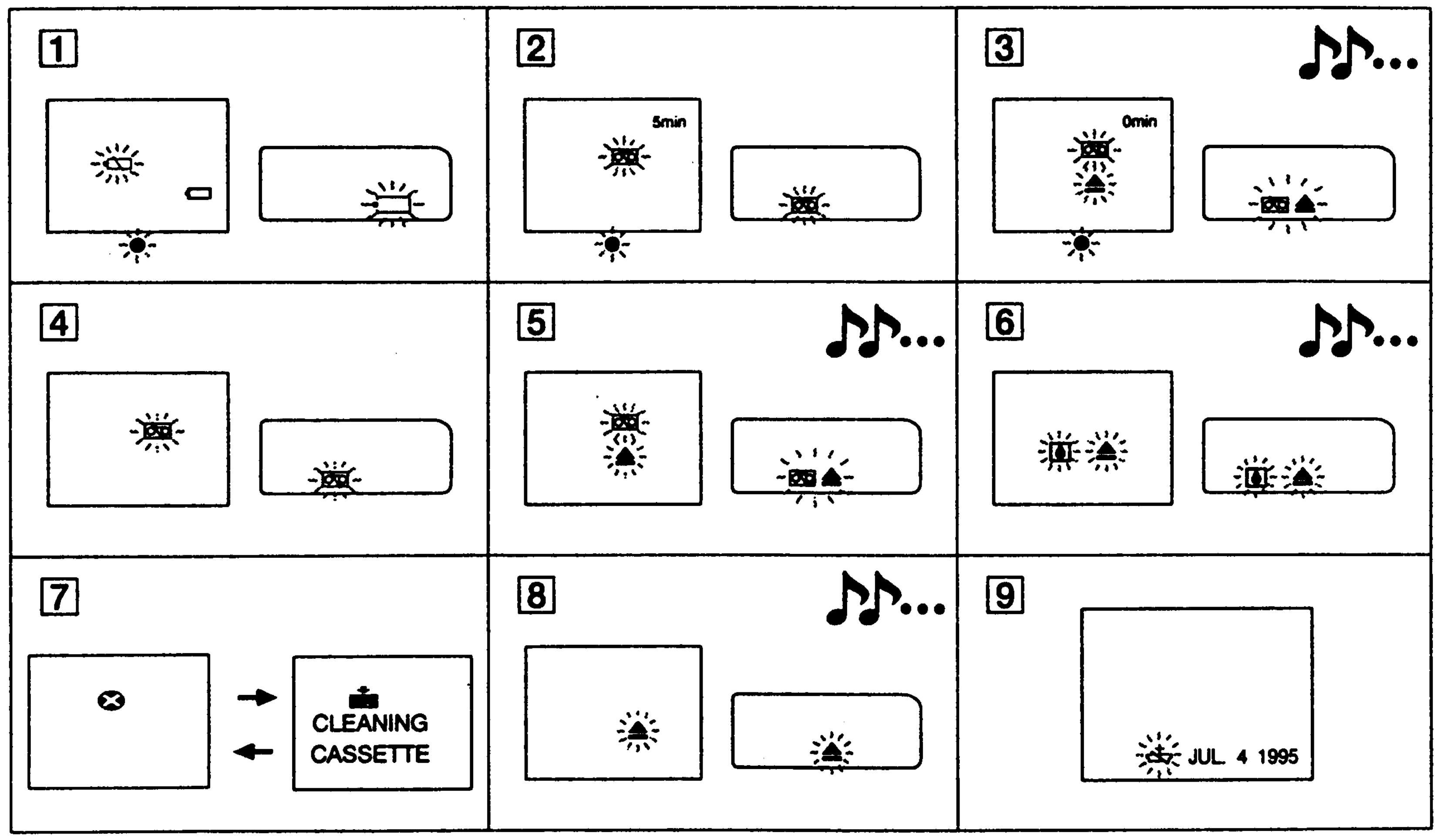


VS-125 BOARD (CONDUCTOR SIDE)



Warning Indicators

If indicators flash in the viewfinder or in the display window, check the following:
♪: you can hear the beep sound when the BEEP is set to ON.



1 **The battery is weak or dead.**
Slow flashing: The battery is weak.
Fast flashing: The battery is dead.

2 **The tape is near the end.**
The flashing is slow.

3 **The tape has run out.**
The flashing becomes rapid.

4 **No tape has been inserted.**

5 **The tab on the tape is out (red).**

6 **Moisture condensation has occurred** (p. 36).

7 **The video heads may be contaminated** (p. 37).
This indicator appears only on the viewfinder.

8 **Some other trouble has occurred.**
Disconnect the power source and contact your Sony dealer or local authorized facility.

9 **The lithium battery is weak or is not installed** (p. 31).

Ref. No.	Part No.	Description	Remark
875	1-645-271-11	FP-575 FLEXIBLE BOARD	
BL801	1-517-325-11	LAMP, FLUORESCENT (0.55 INCH) (TR73/TR76/TR93/TR560/TR600/TR670/TR880)	
IC691	A-7030-368-A	CCD BLOCK ASSY (054 SERVICE) (CCD IMAGER)(TR36/TR73/TR76/TR560)	
IC691	A-7030-370-A	CCD BLOCK ASSY (058 SERVICE) (CCD IMAGER)(TR100)	
IC691	A-7030-373-A	CCD BLOCK ASSY (059V SERVICE) (CCD IMAGER)(TR83/TR93/TR600/TR670/TR880)	
J201	1-537-373-51	JACK BOARD ASSY (TR100/TR600/TR880)	
J201	1-537-415-11	TERMINAL BOARD (TR36/TR73/TR76/TR83/TR93/TR560/TR670)	
M001	1-542-259-11	MICROPHONE, CAP (L-CH)	
M002	1-542-259-11	MICROPHONE, CAP (R-CH)	
M901	A-7048-564-A	DRUM ASSY (DGH-78A-R) (TR36/TR73/TR76/TR83/TR93/TR560/TR670)	
M901	A-7048-776-A	DRUM ASSY (DGH-0B5A-R) (TR100/TR600/TR880)	
M902	8-835-477-12	MOTOR, DC SCE-0101A (CAPSTAN)	
M903	A-7040-304-A	MOTOR BLOCK ASSY (Z), LM (LOADING)	
M905	1-698-364-01	MOTOR ASSY, FOCUS (TYPE I)	
M906	1-698-363-01	MOTOR ASSY, ZOOM (TYPE I)	
M907	3-708-888-01	METER, IG (IRIS)(TYPE II)	
M908	3-708-889-01	MOTOR ASSY, FOCUS (TYPE II)	
M909	3-708-887-01	MOTOR ASSY, ZOOM (TYPE II)	
M910	3-708-898-01	IRIS ASSY (TYPE III)	
M911	3-708-897-01	MOTOR ASSY, FOCUS (TYPE III)	
M912	3-708-896-01	MOTOR ASSY, ZOOM (TYPE III)	
S001	1-572-986-11	SWTICH, ROTARY (ENCODER)	
S002	1-572-987-11	SWITCH, PUSH (3 KEY) (RED PROOF, ME/MP, MP/MP-HG)	
S005	1-570-771-21	SWITCH (C DOWN)	
SE691	1-810-725-31	SENSOR, ANGULAR VELOCITY (PITCH) (TR83/TR93/TR600/TR670/TR880)	
SE692	1-810-725-41	SENSOR, ANGULAR VELOCITY (YAW) (TR83/TR93/TR600/TR670/TR880)	
⚠V901	1-452-673-31	CRT ASSY (M01KXX90WB)(TR36/TR83/TR100)	
W500	1-651-889-11	FP-48 FLEXIBLE BOARD	
W501	1-642-186-11	FP-437 FLEXIBLE BOARD	
⚠W901	1-540-019-21	SOCKET ASSY, CRT (TR36/TR83/TR100)	

****

ACCESSORIES & PACKING MATERIALS
****

Ref. No.	Part No.	Description	Remark
	1-467-574-71	REMOTE COMMANDER (RMT-708)	
	1-569-008-11	ADAPTOR, CONVERSION 2P	
	1-575-334-11	CORD, CONNECTION (A/V connecting cable (STEREO), 1.5m)	
	1-575-335-21	CORD, CONNECTION (S VIDEO connecting cable, 1.5m)(TR100/TR600/TR880)	
*	3-704-295-01	BAG (STANDARD), PROTECTION (TR670PK)	
	3-798-581-21	OPERATION MANUAL (ENGLISH) (TR36/TR73/TR76/TR83/TR93)	
	3-798-581-31	OPERATION MANUAL (FRENCH) (TR76:CND/TR93:CND)	
	3-798-654-11	MANUAL, INSTRUCTION (ENGLISH, SPANISH) (TR560/TR670/TR670PK)	
	3-798-654-41	MANUAL, INSTRUCTION (CHINESE) (TR560/TR670/TR670PK)	
	3-798-655-21	MANUAL, INSTRUCTION (ENGLISH) (TR100/TR600)	
	3-798-655-31	MANUAL, INSTRUCTION (FRENCH)(TR600:CND)	
	3-798-887-11	MANUAL, INSTRUCTION (ENGLISH, SPANISH) (TR880)	
	3-798-887-41	MANUAL, INSTRUCTION (CHINESE) (TR880:E, HK)	
	3-800-185-11	MANUAL, INSTRUCTION (HUNGUL)(TR880:JE)	
	3-800-195-11	INSTRUCTION (TR670PK)	
	3-947-969-21	BELT (S), SHOULDER	
*	3-961-062-01	CUSHION (LOWER)(EXCEPT TR670PK)	
*	3-961-693-01	CUSHION, ACC (EXCEPT TR670PK)	
*	3-963-162-31	INDIVIDUAL CARTON (TR670PK)	
*	3-963-210-01	INDIVIDUAL CARTON (TR83)	
*	3-963-210-11	INDIVIDUAL CARTON (TR36)	
*	3-963-210-21	INDIVIDUAL CARTON (TR100)	
*	3-963-210-61	INDIVIDUAL CARTON (TR93)	
*	3-963-210-71	INDIVIDUAL CARTON (TR76)	
*	3-963-210-81	INDIVIDUAL CARTON (TR560)	
*	3-963-210-91	INDIVIDUAL CARTON (TR73)	
	3-963-605-01	COVER, INTERCEPTOR, LIGHT (TR73/TR76/TR93/TR560/TR600/TR670/TR670PK/TR880)	
*	3-963-668-21	INDIVIDUAL CARTON (TR600)	
*	3-963-668-31	INDIVIDUAL CARTON (TR670)	
*	3-963-668-41	INDIVIDUAL CARTON (TR880)	
	3-963-674-01	CASE, CARRING (TR670PK)	
	3-964-041-01	ADAPTOR, TRIPOD	
*	3-965-128-01	PAT (TR670PK)	
	A-6768-253-B	RFU ADAPTOR (RFU-90UC) (TR560:E/TR670:E/TR670PK)	
	A-7003-317-A	RFU ADAPTOR (RFU-95UC) (TR560:E/TR670:E/TR670PK)	

**	AC-V25A/V25B/V25C	AC POWER ADAPTOR
***	NP-55	BATTERY PACK

Note.

** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.

*** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

****

****
HARDWARE LIST
****

#1 7-627-553-47 PRECISION SCREW +P 2X4 TYPE 3

Be sure to read "Note on the CCD Imager replacement" on page 4-6 when changing the CCD imager.

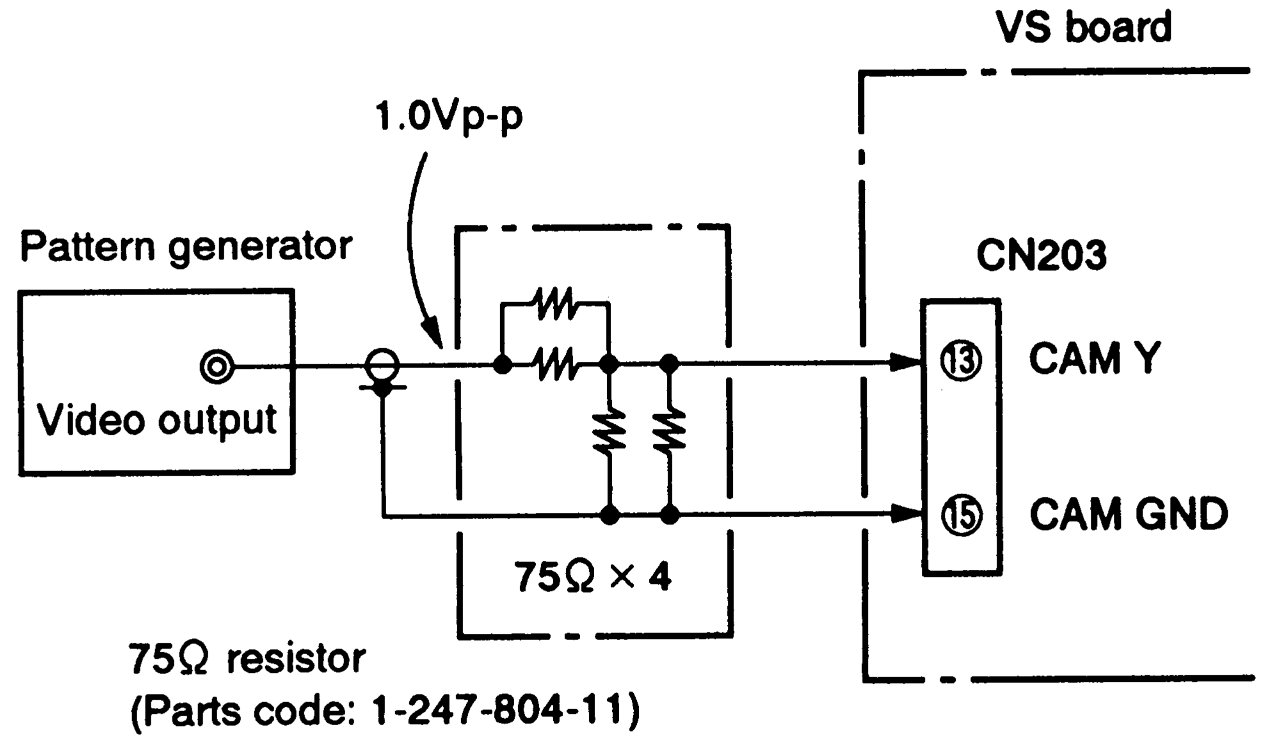
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

5. Comb Filter Adjustment (VS board)

Set the level and phase of the 1H delayed signal for the comb filter.

Mode	Camera record
Signal	Color bar (Note 1)
Measurement Point	Pin ⑭ of IC201 (Y COMB OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	71, 84
Specified Value	Residual chroma component (A) is minimum.

Note 1: Connect the pattern generator as shown in the following figure.



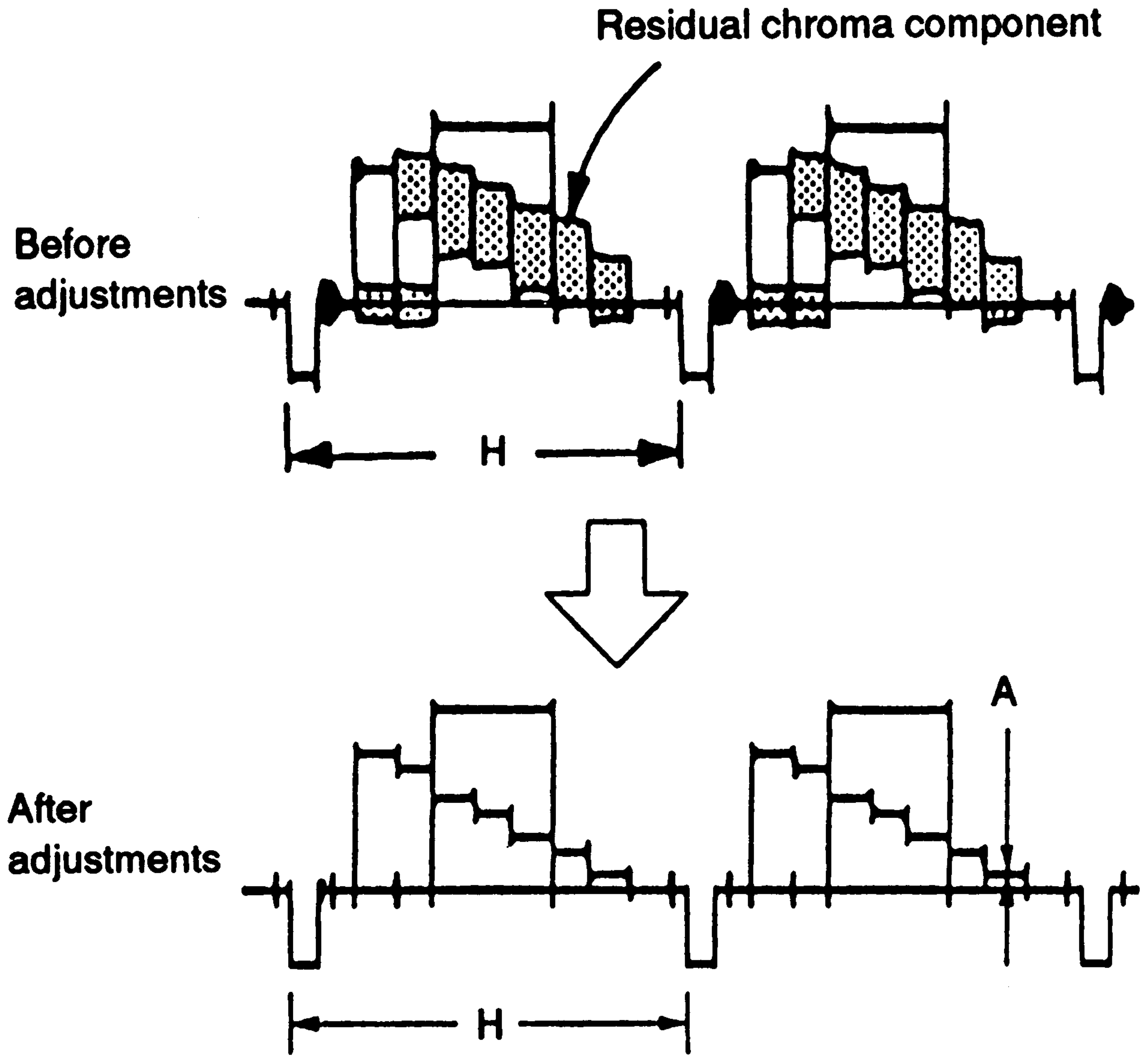


Fig. 6-3-11.

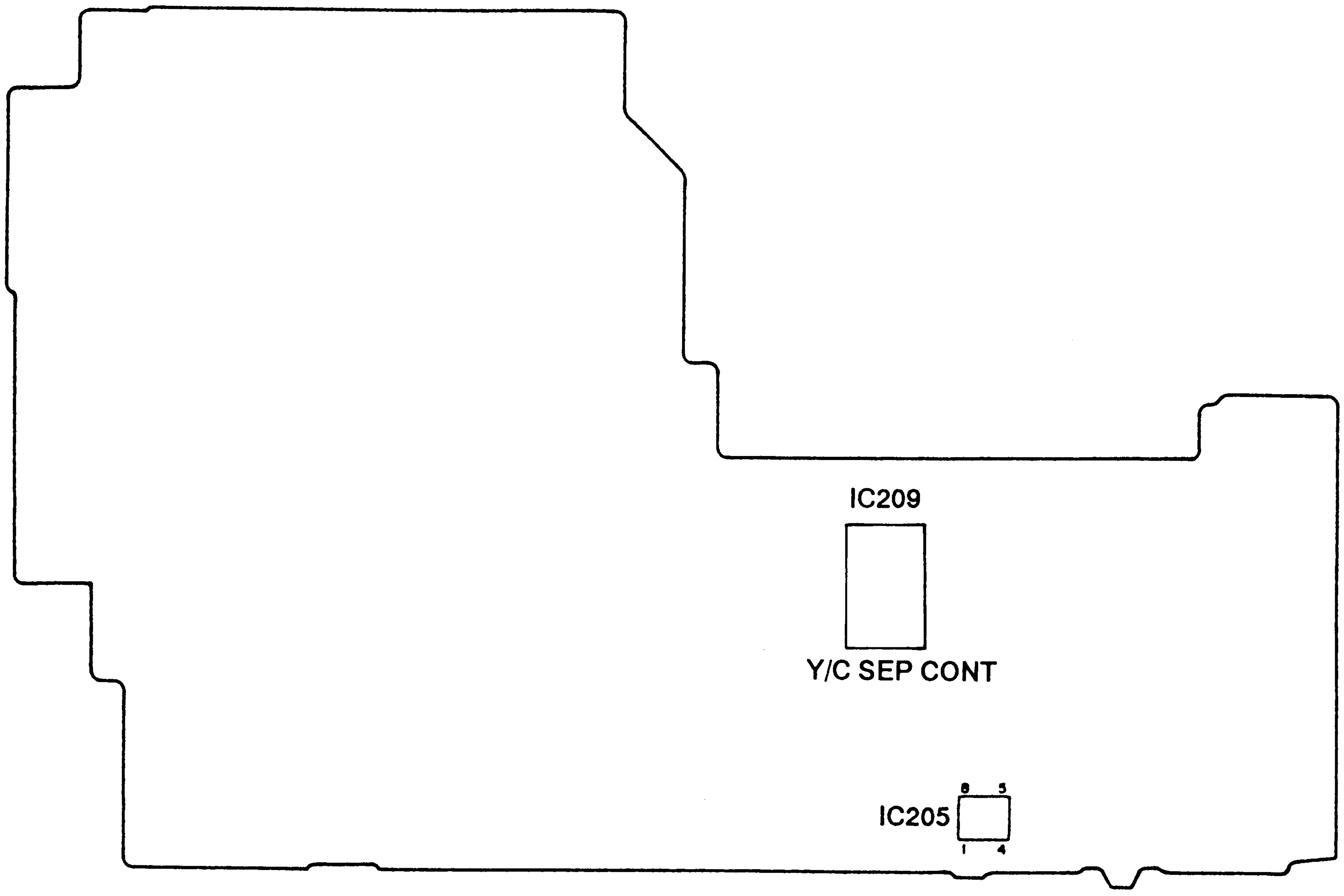
Adjusting method:

1) Set to the VIDEO input mode.
2) Set to the record mode.
3) Set data: 01 to page: 1, address: 00.
4) Set data: 00 to page: 2, address: 00.
5) Set data: 04 to page: 2, address: B0.
6) After memorizing the data of address: 9A of page: 2, set data: 10 to the address.
7) After memorizing the data of address: 9D of page: 2, set data: 30 to the address.
8) Change the data of page: D, address: 71, and adjust the residual chroma component (A) to minimum.
9) Change the data of page: D, address 84 so that the residual chroma component becames minimum.
10) Repeat 8) and 9).
11) Press the PAUSE button of the adjusting remote commander.

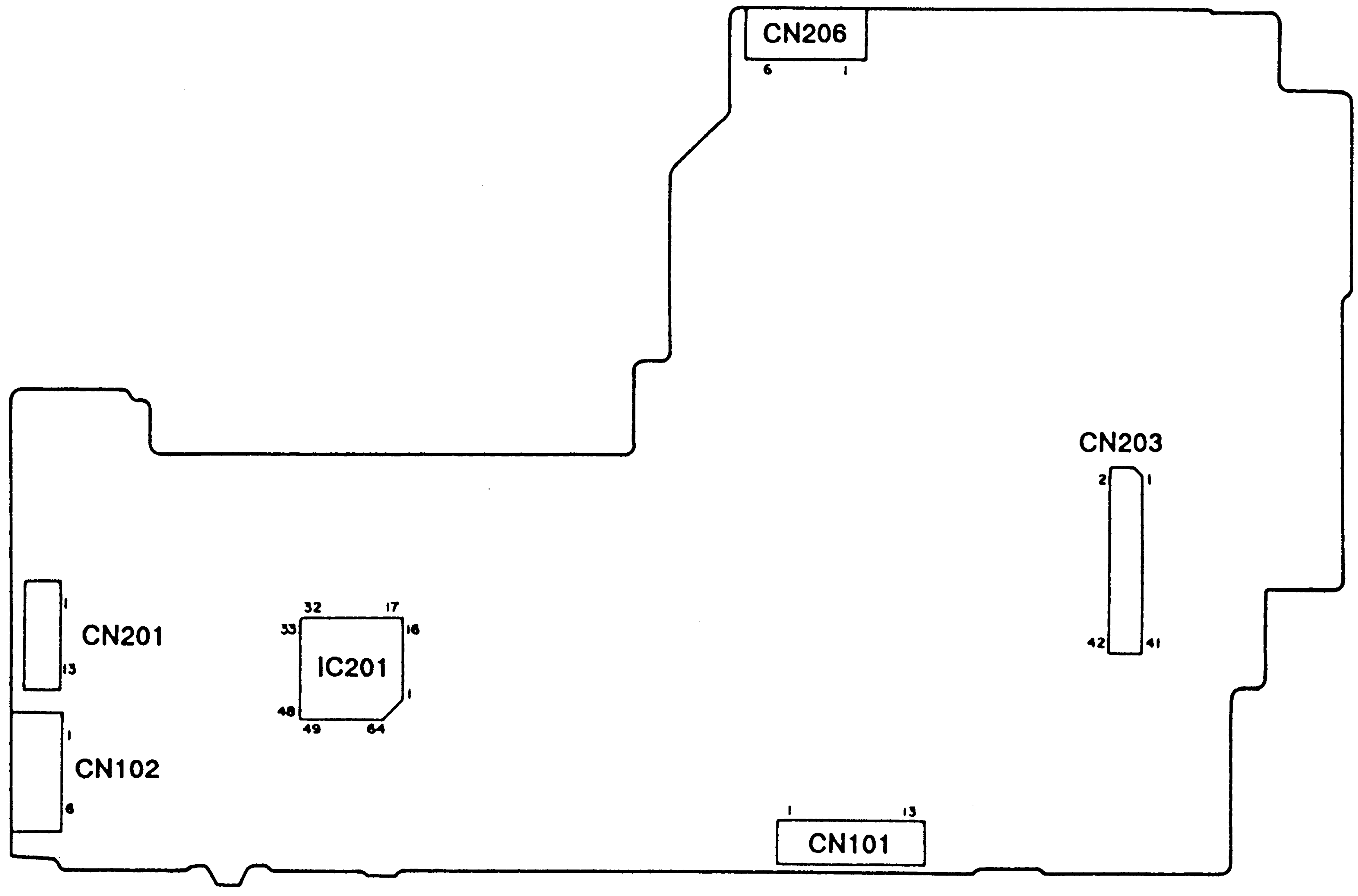
Processing after completing adjustments

1) Set the data memorized at step 7) to address: 9D of page: 2.
2) Set the data memorized at step 6) to address: 9A of page: 2.
3) Set data: 00 to page: 2, address: B0.

VS-125 BOARD (COMPONENT SIDE)



VS-125 BOARD (CONDUCTOR SIDE)



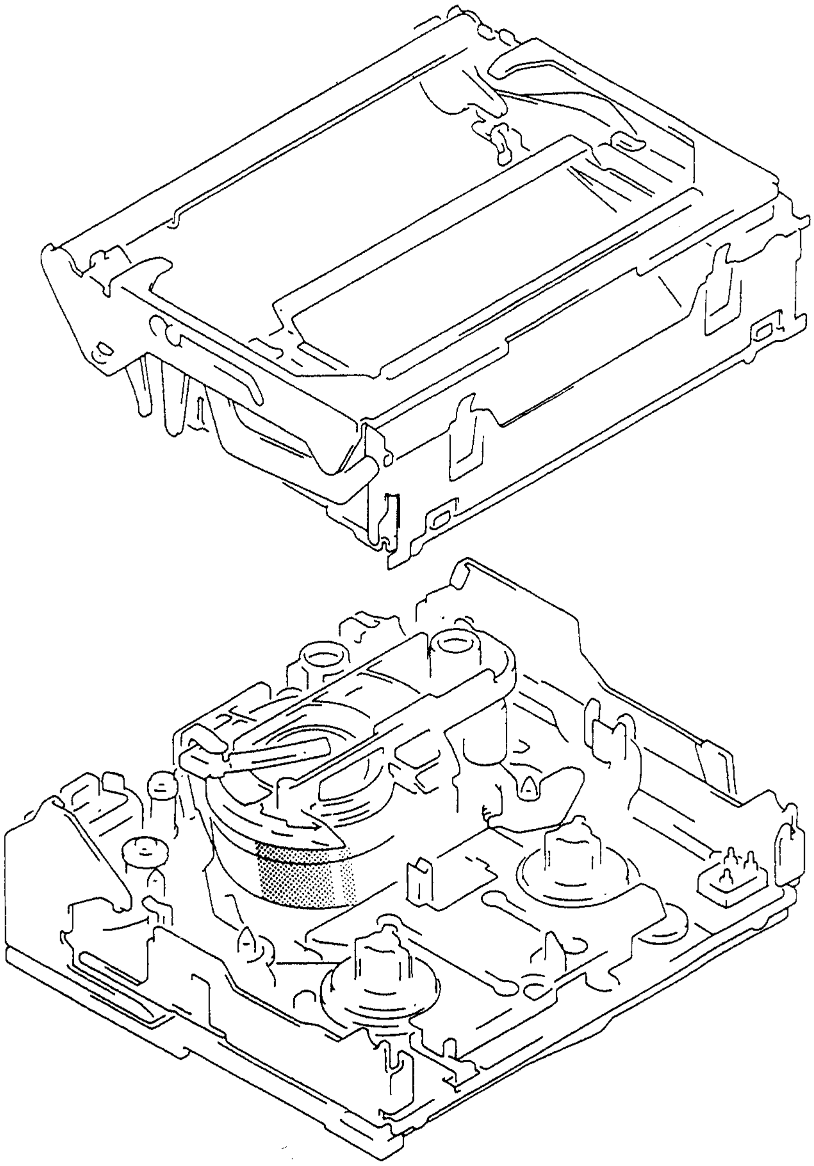
8 mm Video MECHANICAL ADJUSTMENT MANUAL IV

V12995

A MECHANISM

Video 8

File with the SERVICE MANUAL



8 VIDEO RECORDER

SONY®

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1. PREPARATION FOR MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

For removal of the cabinet and boards, refer to "Disassembly" in each Service Manual.
Mechanical adjustment is done in the USE mode. (To select the USE mode, refer to "1-3, Handling of Mode Selector".)

1-1. CASSETTE COMPARTMENT ASSEMBLY

1. Removal (Fig. 1)

1) Select the USE mode.
2) Push the part ⓐ of lock arm ❶ toward the arrow 🅐 to unlock from lock guide ❷, and raise the cassette compartment as shown in Fig. a.
3) Remove two screws ❸ and remove the LS frame ❹ toward the arrow 🅑.
4) With the cassette compartment assembly ❺ pushed in arrow 🅒 direction, distort tabs ⓑ and ⓒ of MD side plate toward the arrow 🅓 to disengage from catches ⓓ and ⓔ of cassette compartment assembly respectively.
   In such a case, insert a screwdriver between MD side plate and catch and disengage the tab ⓑ first, then disengage the tab ⓒ for easy removal as shown in Fig. b.
5) Raise the cassette compartment assembly ❺ in the opposite direction of arrow 🅒 until the shafts ⓕ and ⓖ are disengaged, and push left and right side plates toward arrow 🅓 to remove the cassette compartment assembly.

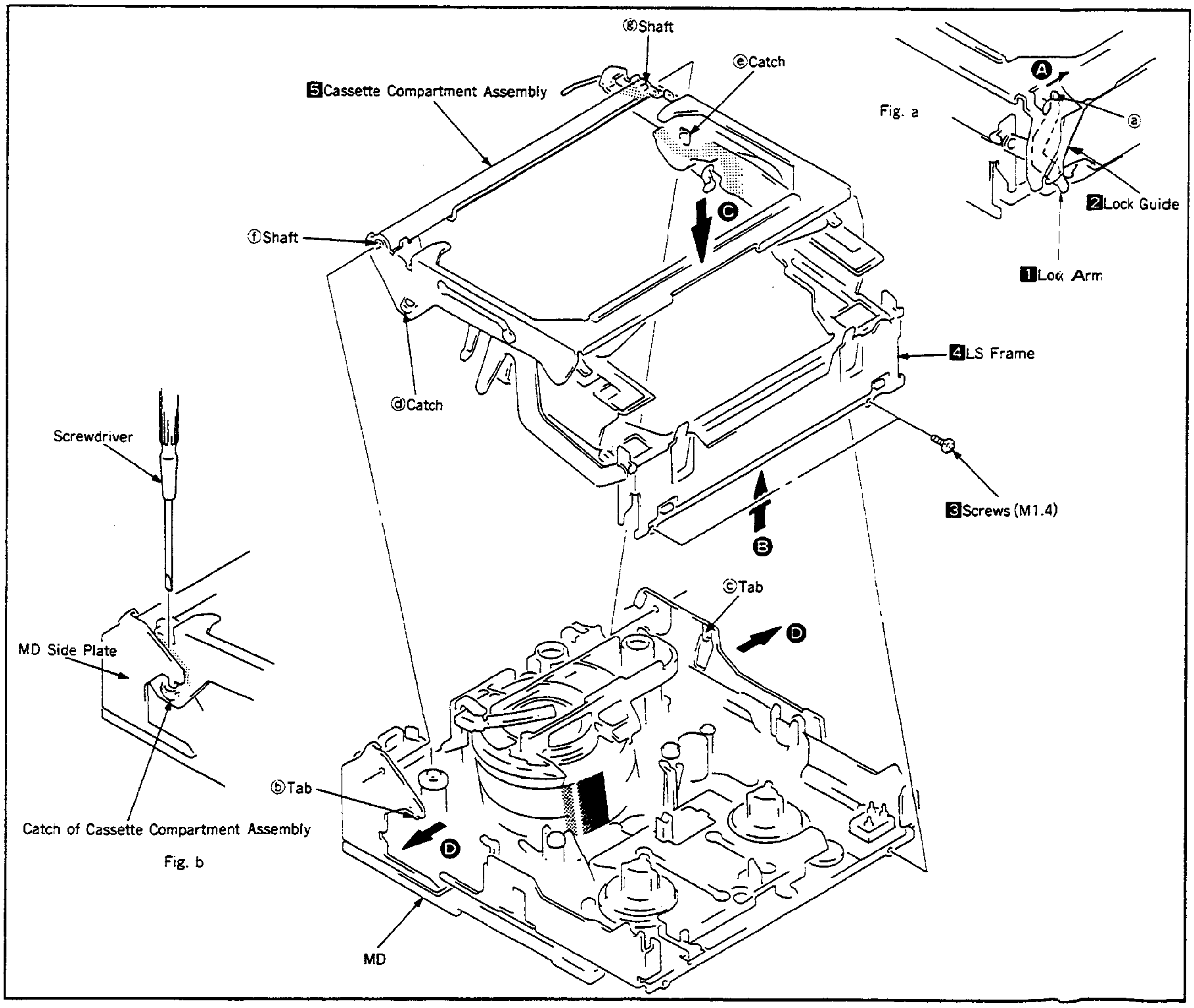


Fig. 1

2. Mounting (Fig. 2)

1) Select the USE mode.
2) Draw the cassette holder ❻ of cassette compartment assembly ❺ toward the arrow 🅔, and lower the LS frame ❹ toward the arrow 🅕.
3) With the cassette compartment assembly ❺ tilted by about 45° against MD, insert shafts ⓕ and ⓖ of cassette compartment assembly into holes ⓗ and ⓘ of MD side plate respectively.
   At this time, the part ⓛ of torsion bar must be positioned on the side ⓚ of LS flexible board (FP-443) (not on the side ⓛ), as shown in Fig. c.
4) Holding holes ⓗ and ⓘ of MD side plate, press the cassette compartment assembly ❺ so that its catches ⓓ and ⓔ are engaged with tabs ⓑ and ⓒ of MD side plate. In such a case, the lock arm ❶ of cassette compartment assembly must be inserted into a groove in the guide rail ❼ on the MD side plate as shown in Fig. d.
5) Insert left and right side plates ⓜ and ⓝ of LS frame ❹ inside the LS chassis ❽.
6) Push down the cassette compartment to lock.

Note : Make sure that the shafts ⓕ, ⓖ and the tabs ⓞ, ⓟ are set in the MD side plate properly.

7) Tighten two screws ❸.

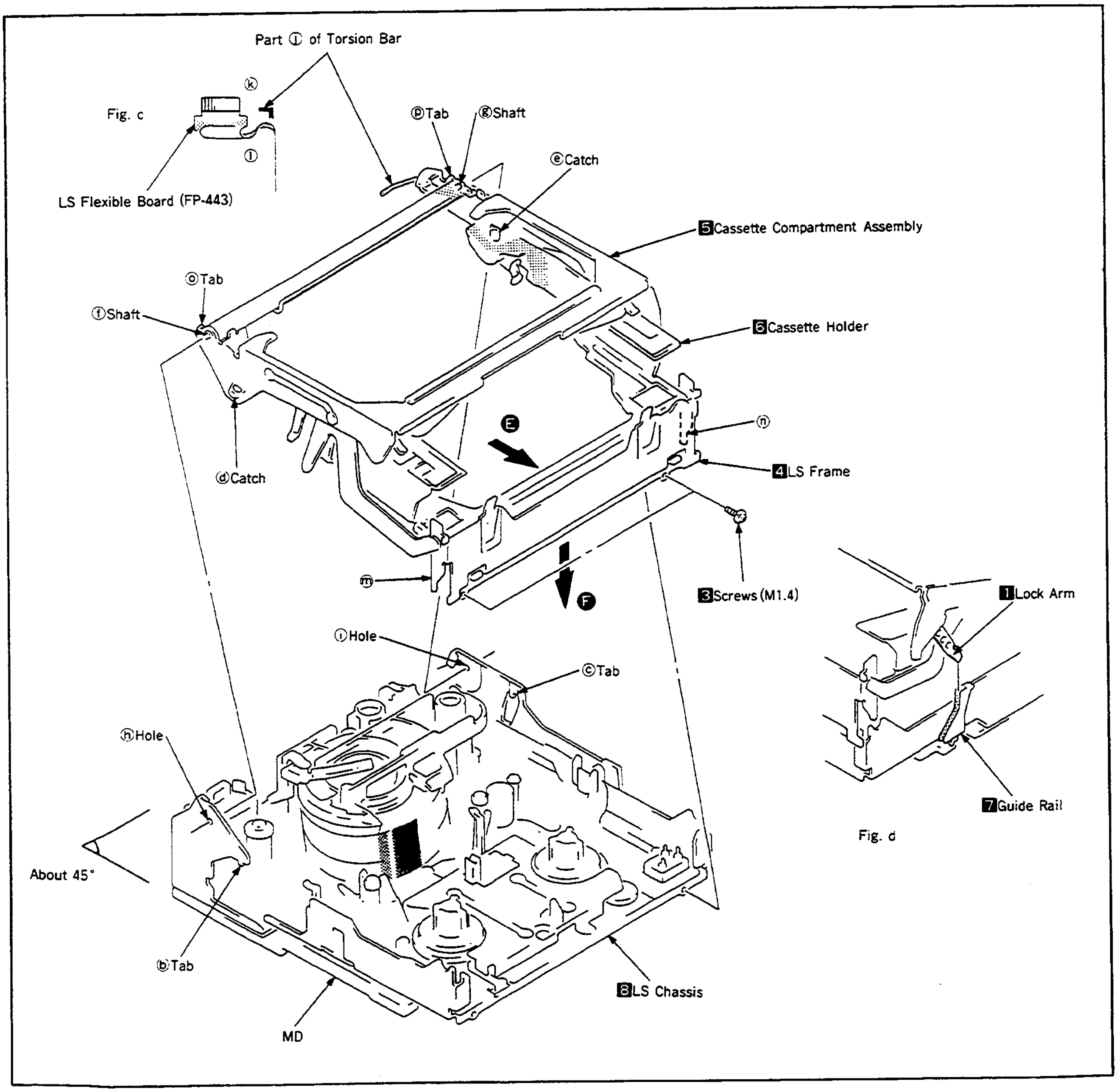


Fig. 2

1-2. OPERATION WITH CASSETTE COMPARTMENT ASSEMBLY REMOVED (Fig. 3)

1) Referring to the Service Manual, supply power with the cabinet and camera removed. (Make the mechanical deck ready to operate.)
2) Place the cap ❷ on the Reflector C ❶.
3) Press the pin of the push switch ❸ (ON state) and fix it with adhesive tape ❹ in that state.

Note : Press the asterisked (✱) pin to set the REC mode.
(This is not required for the other modes.)

4) Push the cassette compartment DOWN switch ❺ in an arrow direction as shown in Fig. a.

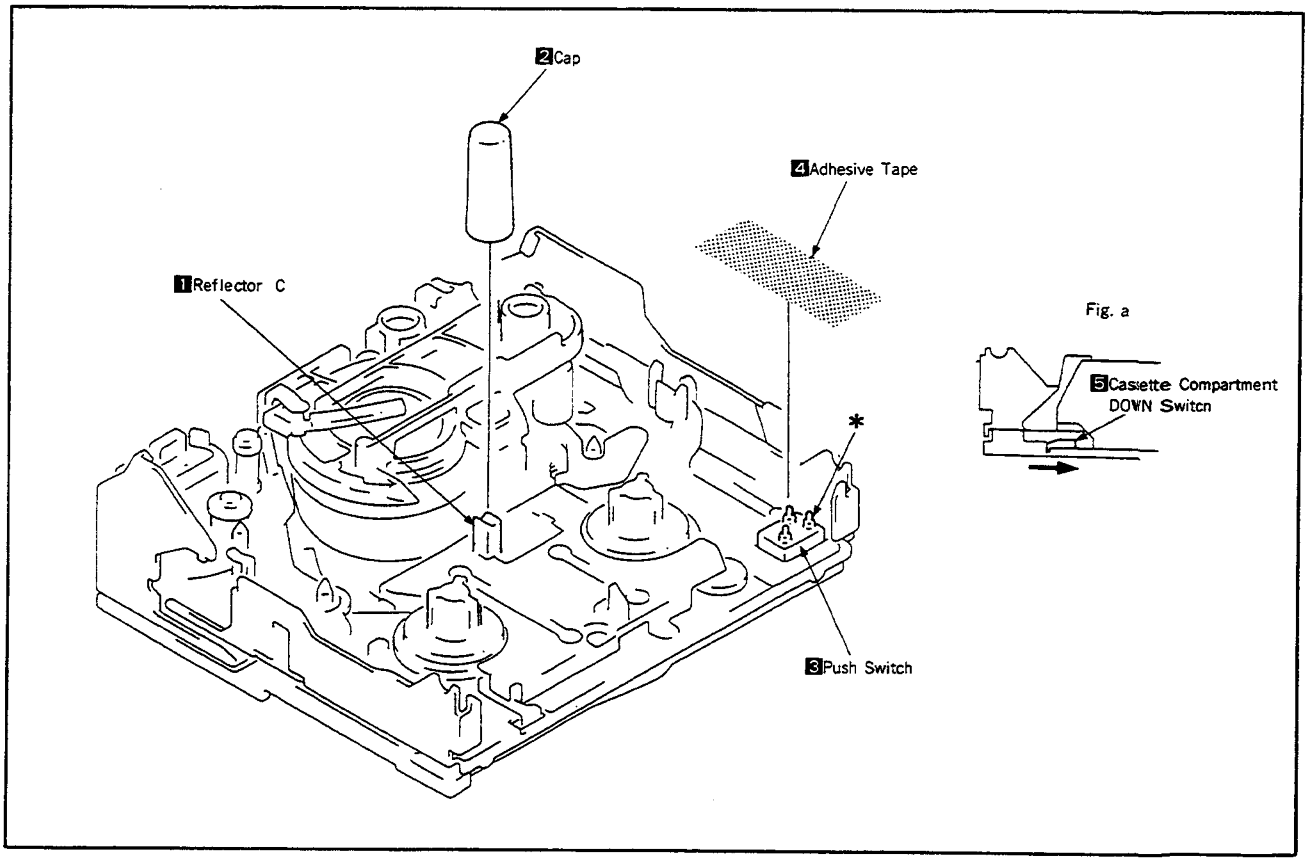


Fig. 3

1-3. HANDLING OF MODE SELECTOR

- Stick the MD process table label to the mode selector IV panel, then mount the panel on the mode selector.
  U,U', FL, O, O' and A mechanisms have different mode indications respectively. Select your disired type. (Fig.4)

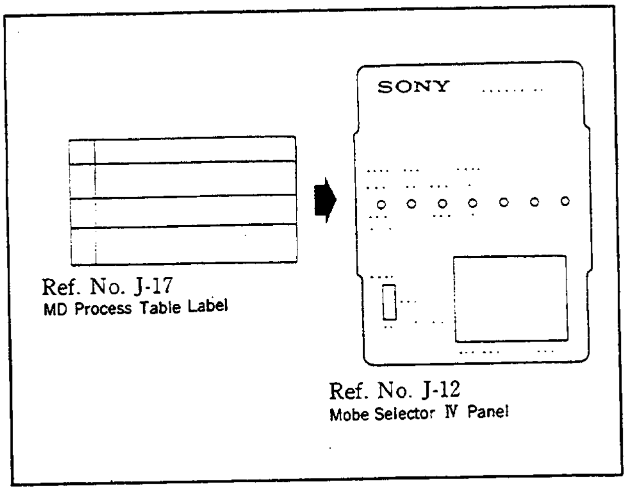


Fig. 4

1 Construction (Fig.5)

2 Connection (Fig.6)

For CCD-FX410 series

1) Insert the FP-425 flexible connector ❶ and M-SW connector ❷ into the mode selector IV conversion connector ❸ respectively.

3. Handling

1) Use the M mode selector buttons only.
2) During mode selection, "BLANK" lights up when no mode is being selected.
3) If the right M mode selector button is kept pressed, END, EJECT, USE, LOAD, READY,TURN, REC and FF light up in that order.
4) When changing over from the FF mode back to the END mode, press the left M mode selector botton to select your desired mode.

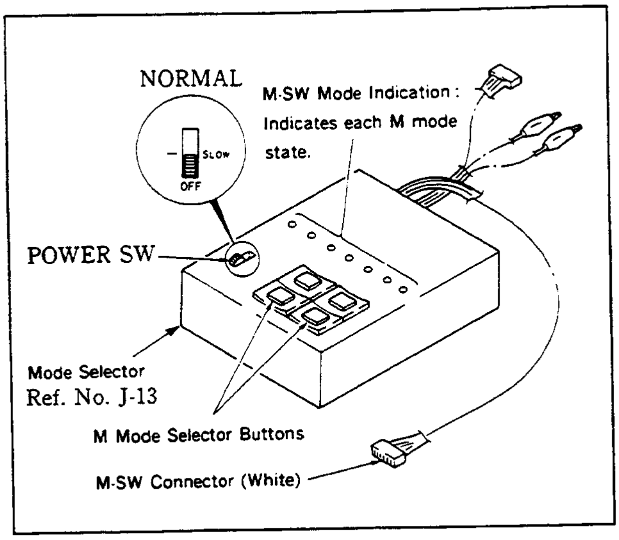


Fig. 5

For CCD-FX410 series

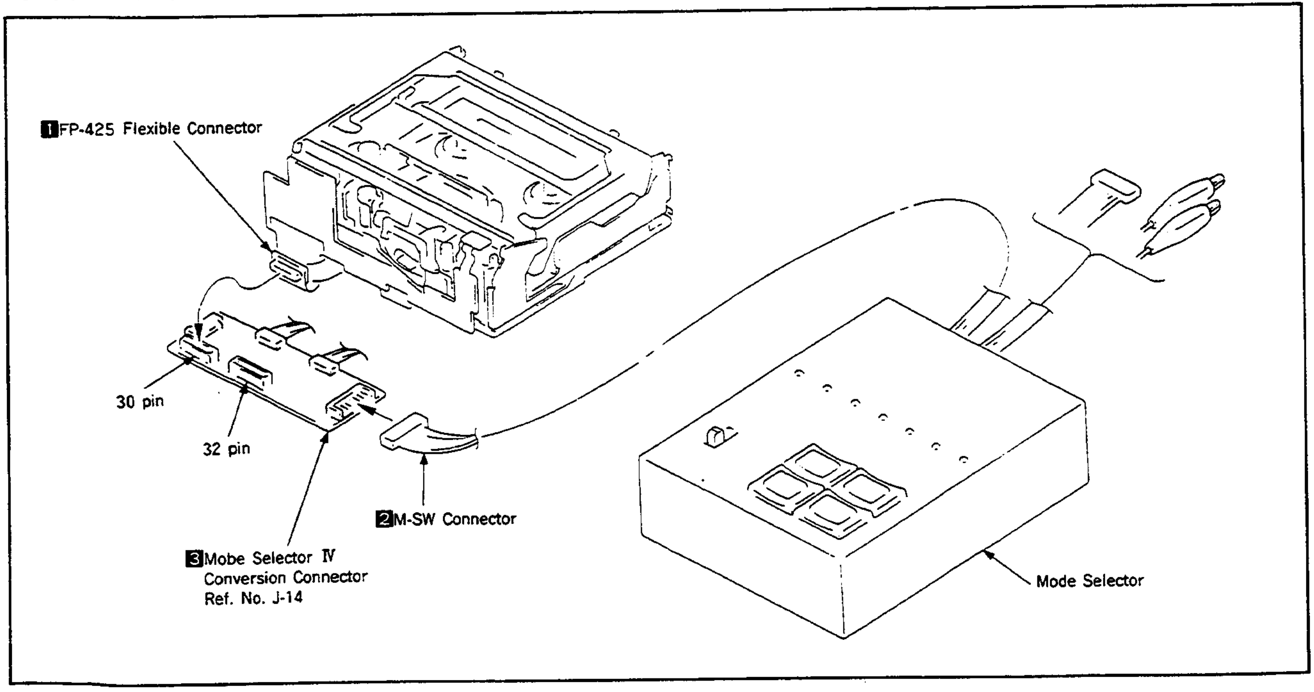
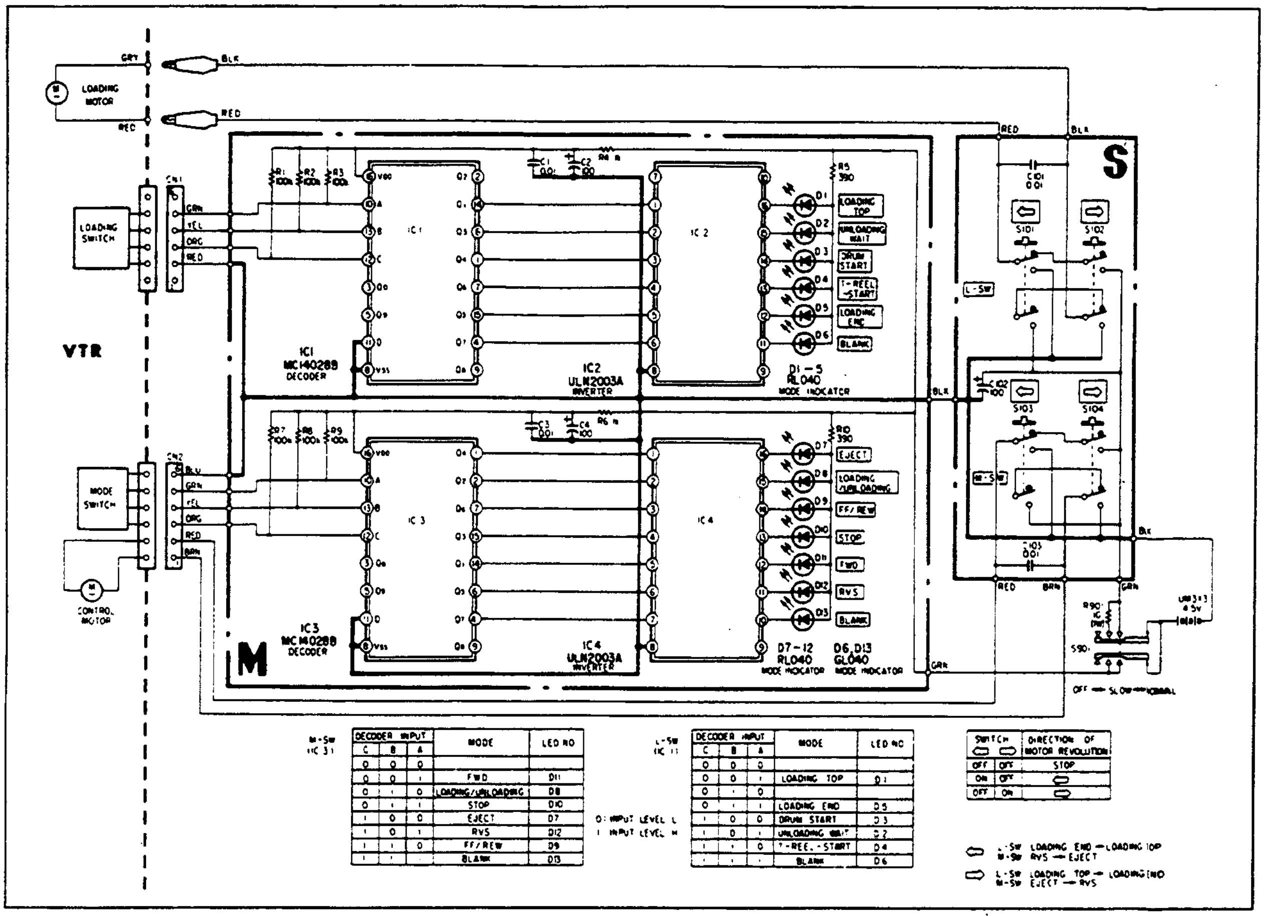

❶FP-425 Flexible Connector
30 pin
32 pin
❷M-SW Connector
❸Mobe Selector Ⅳ Conversion Connector Ref. No. J-14
Mode Selector

Fig. 6

1-4. MODE SELECTOR SCHEMATIC DIAGRAM



M-SW (IC 3)

DECODER INPUT			MODE	LED NO
C	B	A		
0	0	0		
0	0	1	FWD	D11
0	1	0	LOADING/UNLOADING	D8
0	1	1	STOP	D10
1	0	0	EJECT	D7
1	0	1	RVS	D12
1	1	0	FF/REW	D9
1	1	1	BLANK	D13

0: INPUT LEVEL L
1 INPUT LEVEL H

L-SW (IC 1)

DECODER INPUT			MODE	LED NO
C	B	A		
0	0	0		
0	0	1	LOADING TOP	D1
0	1	0		
0	1	1	LOADING END	D5
1	0	0	DRUM START	D3
1	0	1	UNLOADING WAIT	D2
1	1	0	T-REEL-START	D4
1	1	1	BLANK	D6

SWITCH ⇦	SWITCH ⇨	DIRECTION OF MOTOR REVOLUTION
OFF	OFF	STOP
ON	OFF	⇦
OFF	ON	⇨

⇦ L-SW LOADING END → LOADING TOP
M-SW RVS → EJECT

⇨ L-SW LOADING TOP → LOADING END
M-SW EJECT → RVS

1-5. MODE SELECTOR PARTS LIST

Ref. No	Part No.	Description		
		CAPACITOR		
C1	1-108-579-00	MILER	0.01μF	50V
C2	1-123-333-00	ELECT	100μF	24V
C3	1-108-579-00	MILER	0.01μF	50V
C4	1-123-333-00	ELECT	100μF	24V
C101	1-108-579-00	MILER	0.01μF	50V
C102	1-123-333-00	ELECT	100μF	24V
C103	1-108-579-00	MILER	0.01μF	50V
		DIODE		
D1	8-719-812-31	DIODE TLR123		
D2	8-719-812-31	DIODE TLR123		
D3	8-719-812-31	DIODE TLR123		
D4	8-719-812-31	DIODE TLR123		
D5	8-719-812-31	DIODE TLR123		
D6	8-719-812-33	DIODE TLG123A		
D7	8-719-812-31	DIODE TLR123		
D8	8-719-812-31	DIODE TLR123		
D9	8-719-812-31	DIODE TLR123		
D10	8-719-812-31	DIODE TLR123		
D11	8-719-812-31	DIODE TLR123		
D12	8-719-812-31	DIODE TLR123		
D13	8-719-812-33	DIODE TLG123A		

Ref. No	Part No.	Description		
		IC		
IC1	8-752-240-28	IC	TC4028BP	
IC2	8-752-120-03	IC	μPA2003C	
IC3	8-759-240-28	IC	TC4028BP	
IC4	8-759-120-03	IC	μPA2003C	
		RESISTOR		
R1	1-247-179-00	CARBON	100K	1/4W
R2	1-247-179-00	CARBON	100K	1/4W
R3	1-247-179-00	CARBON	100K	1/4W
R4	1-247-131-00	CARBON	1K	1/4W
R5	1-247-121-00	CARBON	390	1/4W
R6	1-247-131-00	CARBON	1K	1/4W
R7	1-247-179-00	CARBON	100K	1/4W
R8	1-247-179-00	CARBON	100K	1/4W
R9	1-247-179-00	CARBON	100K	1/4W
R10	1-247-121-00	CARBON	390	1/4W
R901	1-214-594-00	METAL	10	1W

2. PERIODIC CHECK AND MAINTENANCE

- Carry out the following maintenance and periodic checks in order not only to fully exhibit the functions and performance of the set, but also for the equipment and tape. After repairing, service the set as follows, regarless of the length of use.

2-1. CLEANING OF ROTARY DRUM ASSEMBLY

1) Gently apply chamois cloth (Ref. No. J-2) soaked in cleaning liquif (Ref. No.J-1) to the rotary drum assembly.
   Clean it by rotating the upper rotary drum assembly slowly counterclockwise by hand.

Note : Do not rotate the motor by power or rotate the upper rotary drum assembly clockwise by hand. Also, the head tip is highly likely to be damaged if the chamois cloth is moved in a pependicular direction to the it. make sure to follow the instructions above for cleaning the rotarydrum assembly.

2-2. CLEANING OF TAPE PATH (Fig.7)

1) In the USE mode, clean the tape running system (TG - 1,- 2,- 3,- 4,- 5, - 6, - 7, pinch roller, and capstan shaft) and the lower drum, using a super fine applicator (Ref. No. J - 3) soaked in the cleaning liquid.

Note : Note that no oil or grease of each link mechanism adheres to the super fine applicator (Ref. No. J - 3).

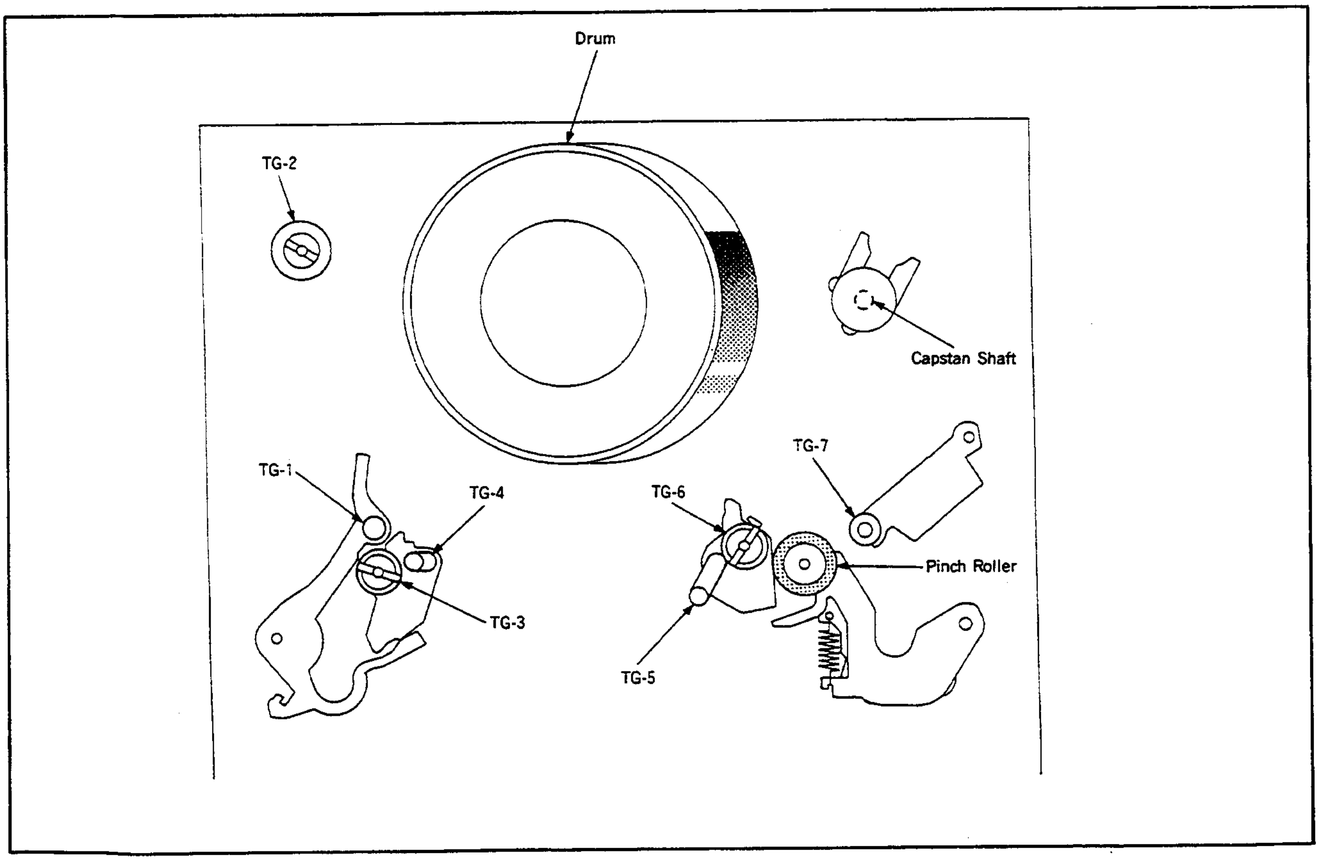


Fig. 7

2-3. PERILDIC CHECK ITEMS

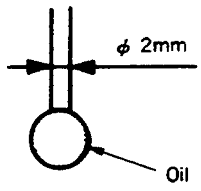
Location of Maintenance and check		Hours of Use (H)										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
Tape trans-portion System	Cleaning of tape path surface	○	○	○	○	○	○	○	○	○	○	Be careful of oil
	Cleaning and degaus-sing of rotary assembly	○	○	○	○	○	○	○	○	○	○	Be careful of oil
Driving System	Relay belt	—	☆	—	☆	—	☆	—	☆	—	☆	3-944-539-01
	Capstan shaft	—	◎	—	◎	—	◎	—	◎	—	◎	Be adsolutely careful not to get oil on the tape path surface.
	Relay pulley shaft	—	◎	—	◎	—	◎	—	◎	—	◎	
	Loading motor	—	☆	—	☆	—	☆	—	☆	—	☆	A-7040-304-A
Performance Confirmation	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD. RVS torque measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○ : Cleaning ◎ : Oil ☆ : Confirmation

Note : When overhauling, refer to the items above to replace parts.

Note : Concerning oil

- Be sure to use specified oil. (If you use oil with different visicosity, etc., it may cause troubles.)
  Oil : Part No. 7-661-018-18 (Mitsubishi Diamond Oil Hydrofluid NT - 68)
- When lubricating bearings, be sure use oil free from dust, etc. (If you use oil with dust, etc. contained, it may cause bearings to be worn out or seized.)
- A drip of oil refers to an amount attached to the tip of a ϕ 2mm stick shown in the right figure.



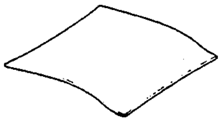
2-4. Service jigs list

Ref. No.	Name	Part No.	Fixture No.	Usage and Others
J-1	Cleaning fluid	Y-2031-001-0		
J-2	Chamois cloth	2-034-697-00		
J-3	Super fine applicator (Made by NIPPON APPLICATOR, P752D)			
J-4	Head degausser	Widely available		
J-5	Small mirror for adjustment Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-6	Alignment tape NTSC (WR5-1N) PAL (WR5-1C)	8-967-995-01 8-967-995-06		Tape path
J-9	FWD and RVS winding torque cassette	J-6080-824-A	GD-2086	
J-10	Rotary drum jig	(Attached to the maintenance rotary upper drum)		
J-11	Screwdriver for tape path	J-6082-026-A		For tape guide adjustment
J-12	Mode selector Ⅳ panel	J-6082-105-A		
J-13	Mode selector	J-6080-825-A		For all models
J-14	Mode selector Ⅳ conversion connector	J-6082-167-A		
J-15	FWD B.T. adjusting driver	J-6082-182-A		
J-16	Adjusting remote controller	J-6082-053-B		Tape path (Setting of PATH mode)
J-17	MD process table label	J-6082-166-A		

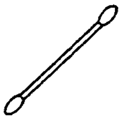
Other equipment ● Oscilloscope
● Analog tester (20 kΩ)

J-1

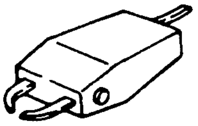
J-2



J-3



J-4



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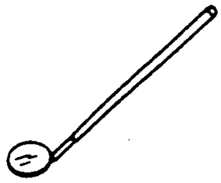

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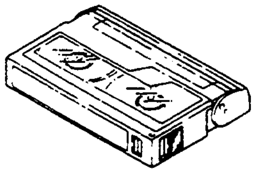

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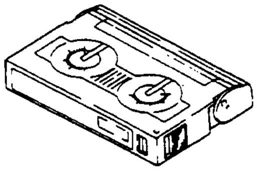
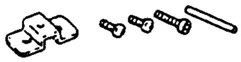
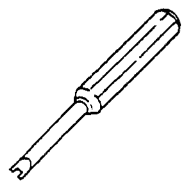


J-10

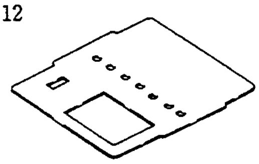


(Attached to the maintenance rotary upper drum)

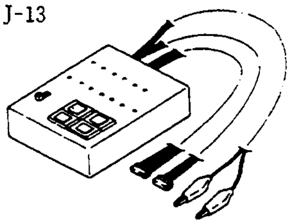
J-11



J-12



J-13



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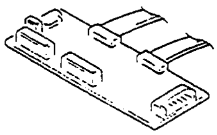

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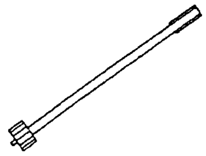
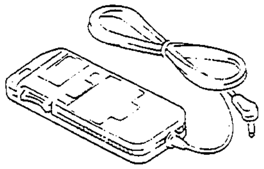
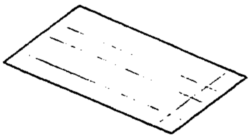


J-16



J-17



3. MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

Note : Use the mode selector (Ref. No. J-13) for the following mechanical checks, adjustments and replacements.

Note : The modes in ☐ are those set by pressing the mode selector buttons.

3-1. RETAINER, GOOSENECK ASSEMBLY (Fig. 8)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove a screw ❶.
3) Remove the Retainer, Gooseneck assembly ❷.

2. Mounting

1) Mount the Retainer, Gooseneck assembly ❷ with its two tabs and holes of LS chassis engaged with its hole and a boss of LS chassis.
2) Tighten the screw ❶.
3) Referring to 1-1, mount the cassette compartment assembly.

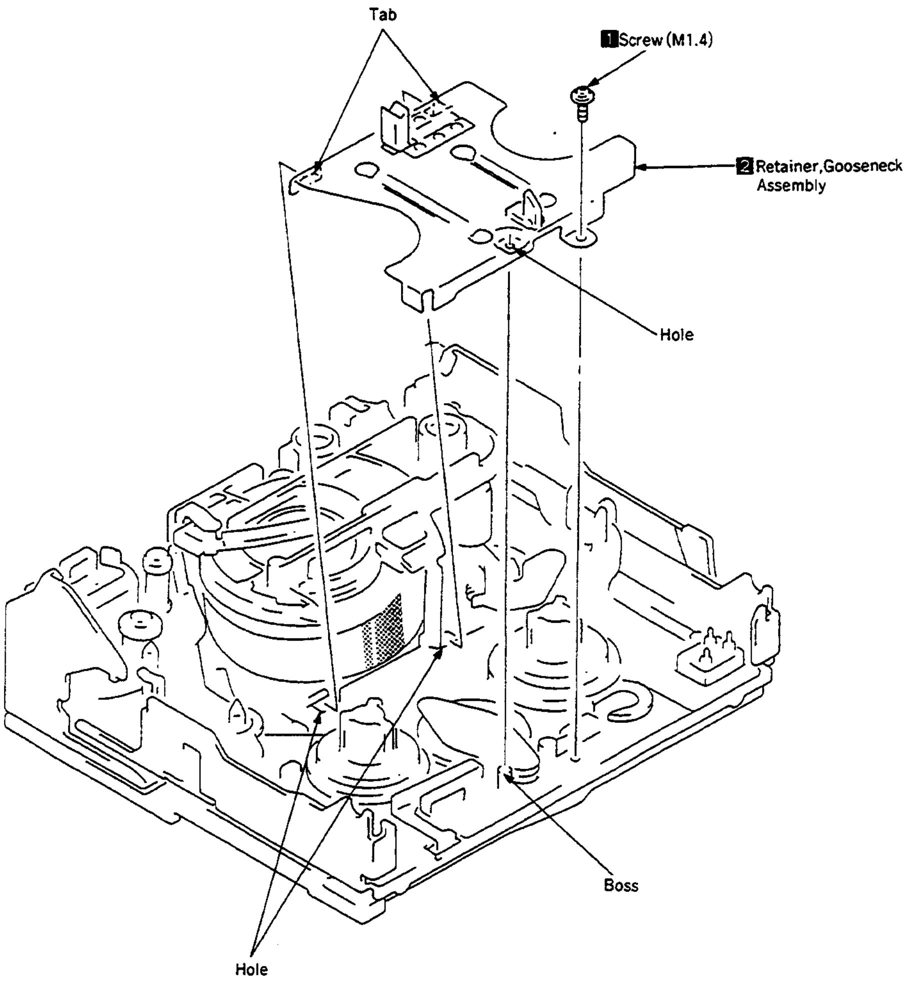


Fig. 8

3-2. PROTECTOR BASE ASSEMBLY (Fig. 9)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove two screws ❶, then the protector base assembly ❷.

2. Mounting

1) Mount the protector base assembly ❷ with its three hole engaged with two dowels of mechanical chassis, and a dowel of TG-5 Base Holder ❸.
2) Tighten two screws ❶.
3) Referring to 1-1, mount the cassette compartment assembly.

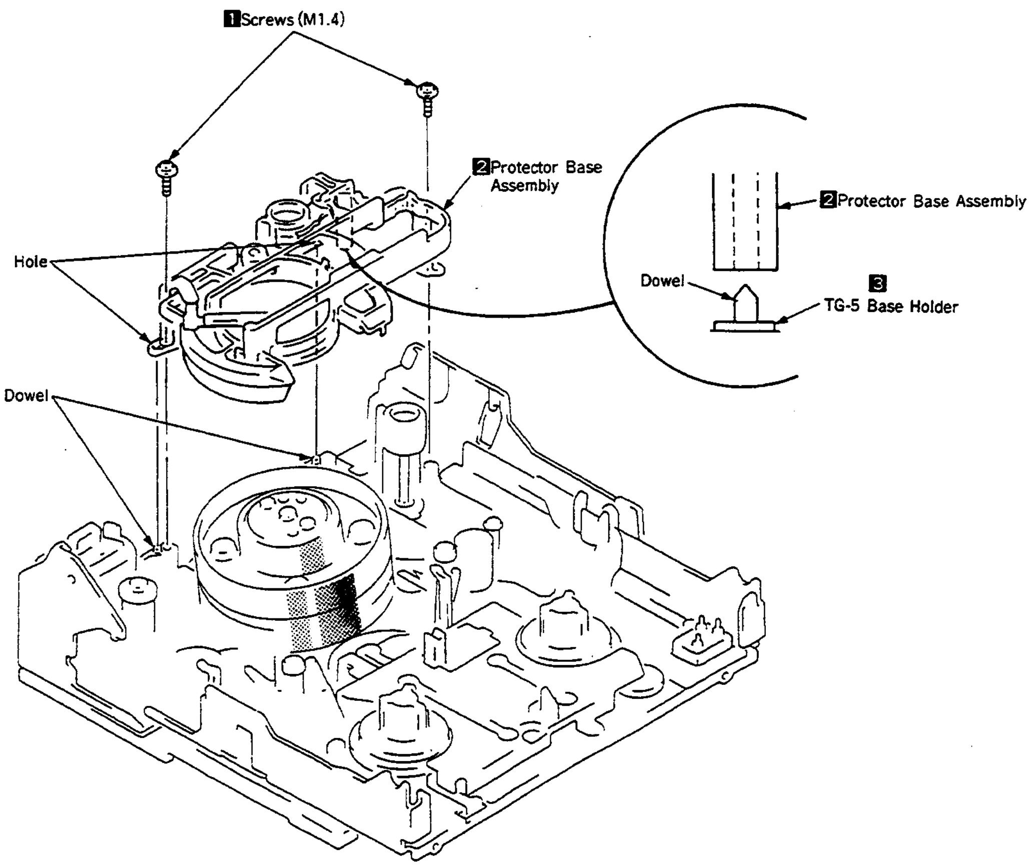


Fig. 9

3-3. DRUM ASSEMBLY (Fig. 10)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-2, remove the protect base assembly.
3) Disconnect the connector of FP-444 flexible board ❶ on the back of MD.
4) Remove three screw ❷, then the drum assembly ❸.

Note : Do not touch the outer surfaced of drum (hold portions 🅐 and 🅑 of drum).

2. Mounting

1) Mount the drum assembly ❸ while aligning with two dowels ⓐ of chassis.

Note : Do not touch the outer surfaced of drum (hold portions 🅐 and 🅑 of drum).

2) Tighten three screw assemblies ❷ in the order of 1, 2 and 3.

Note : Tighten lightly not to deform the drum lead.

3) Apply a screw locking agent to prevent screws ftom loosening.

Note : In tightening the screws, pushing down the drum extremely will allow the drum to float up.

4) Connect the connector of FP-444 flexible board ❶ on the back of MD.
5) Referring to 3-2, mount the protect base assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

Note : After mounting, make tape path adjustment in Section 4.

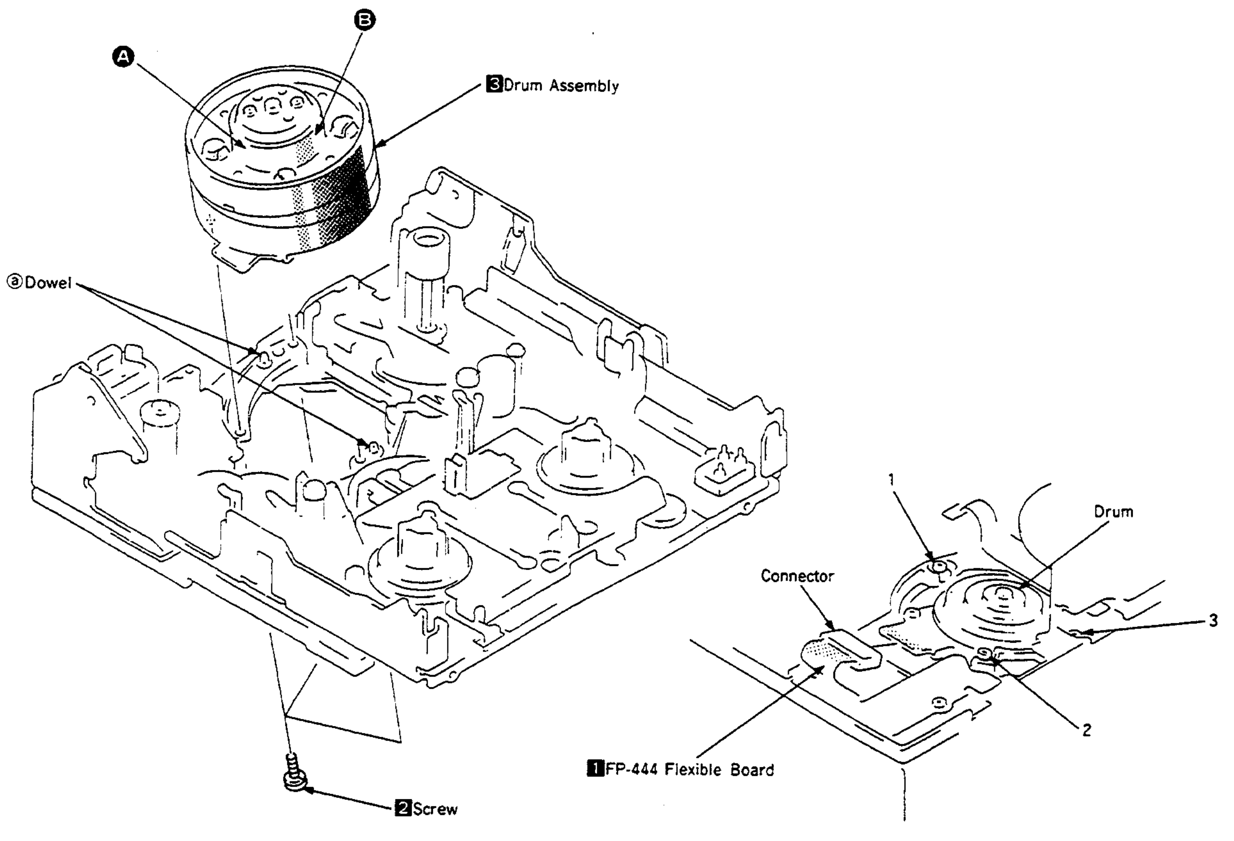


Fig. 10

3-4. CAPSTAN MOTOR ASSEMBLY (Fig. 11)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Remove two screw 1, then the capstan cover 2.
3) Remove the screw 3, then the capstan motor assembly 4.

2. Mounting

1) Mount the capstan motor assembly 4 and tighten the scre 3.

Note : In mounting the capstan motor assembly, hold lightly the capstan motor assembly until the rotor gear aligns with the change gear Assy, then insert fully the assembly when both gears are engaged completely by manually rotating the rotor. (Take care not to damage the change gear Assy.)

2) Mount the capstan cover 2 and tighten two screws 1.
3) Referring to 1-1, mount the cassette compartment assembly.

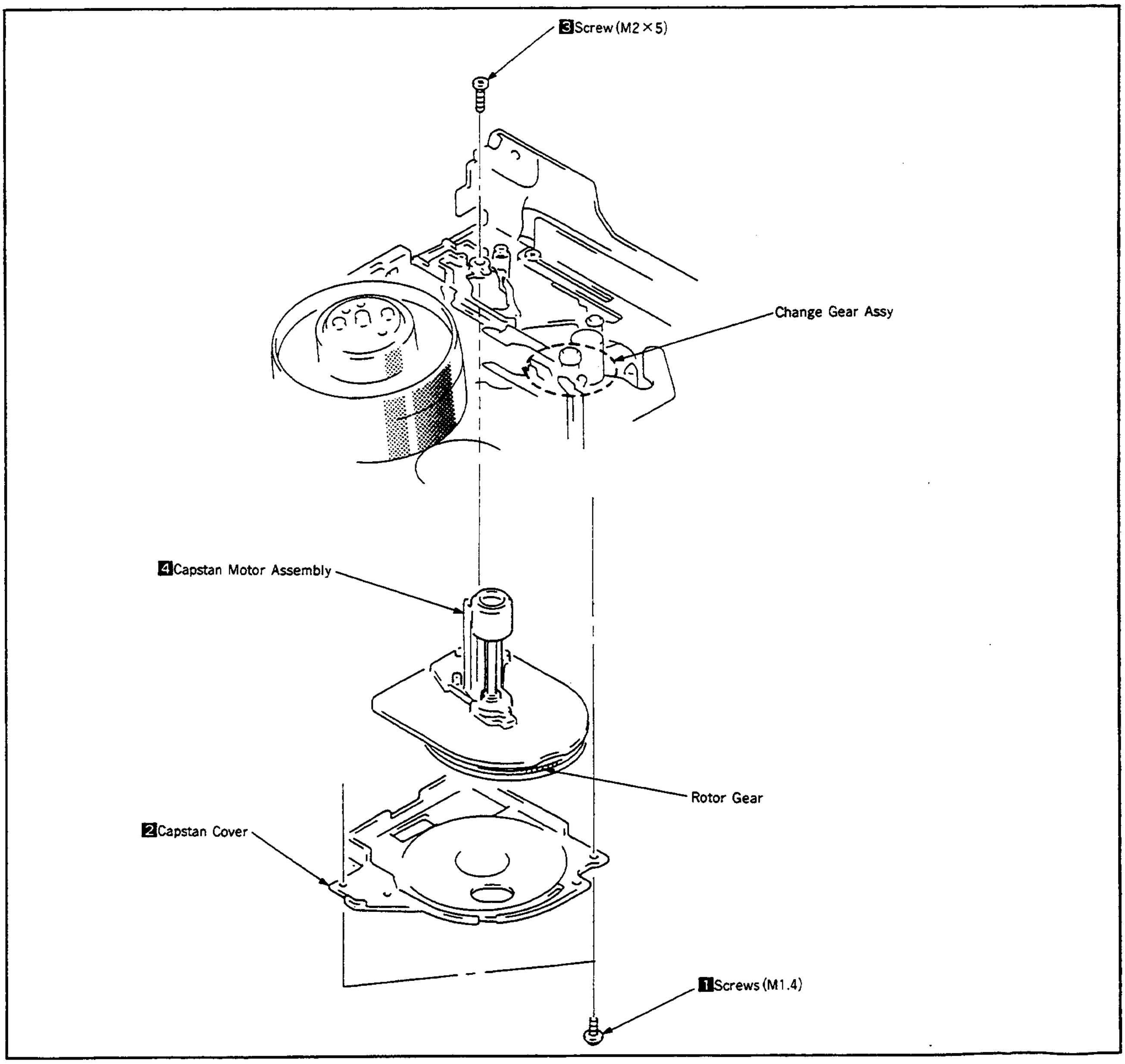


Fig. 11

3-5. TAKE-UP REEL TABLE ASSEMBLY AND T- SOFT ASSEMBLY (Fig. 12)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Remove the take-up reel table assembly 1.
4) Remove the T soft assembly 2, then the T soft arm 3.

2. Mounting

1) Mount the T soft arm 3 with its long hole ⓒ engaged with the boss ⓓ of LS chassis.
2) Mount the T soft assembly 2 with its tab ⓐ engaged with a square hole ⓑ of T soft arm, as shown in Fig. a.
3) Mount the take-up reel table assembly 1 and rotate it toward the arrow Ⓐ to be latched with T hard claw.
4) Referring to 3-1. mount the Retainer, Gooseneck assembly.
5) Referring to 1-1, mount the cassette compartment assembly.

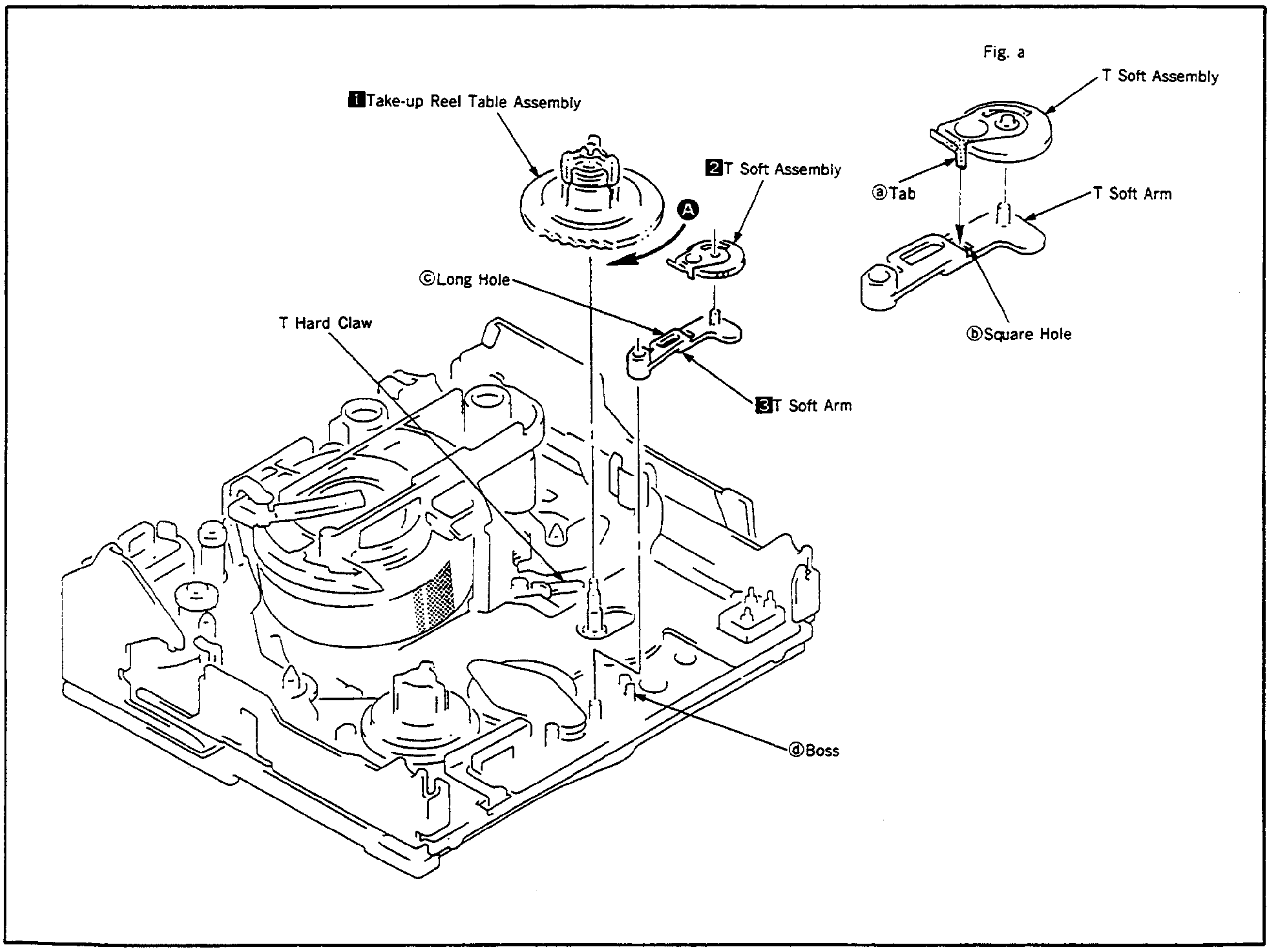


Fig. 12

3-6. PINCH ARM ASSEMBLY (Fig. 13)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Select the READY mode.
3) Remove a washer ❶, then the pinch arm assembly ❷.

2. Mounting

1) Select the READY mode.
2) Hooking a spring of pinch arm assembly ❷ to the cassette positioning boss on the chassis, mount the pinch arm assembly on the shaft of LS chassis assembly as shown in Fig. a.
3) Push in the spring with tweezers up to the root of boss as shown in Fig. b.
4) Mount the washer ❶.
5) Referring to 1-1, mount the cassette compartment assembly.

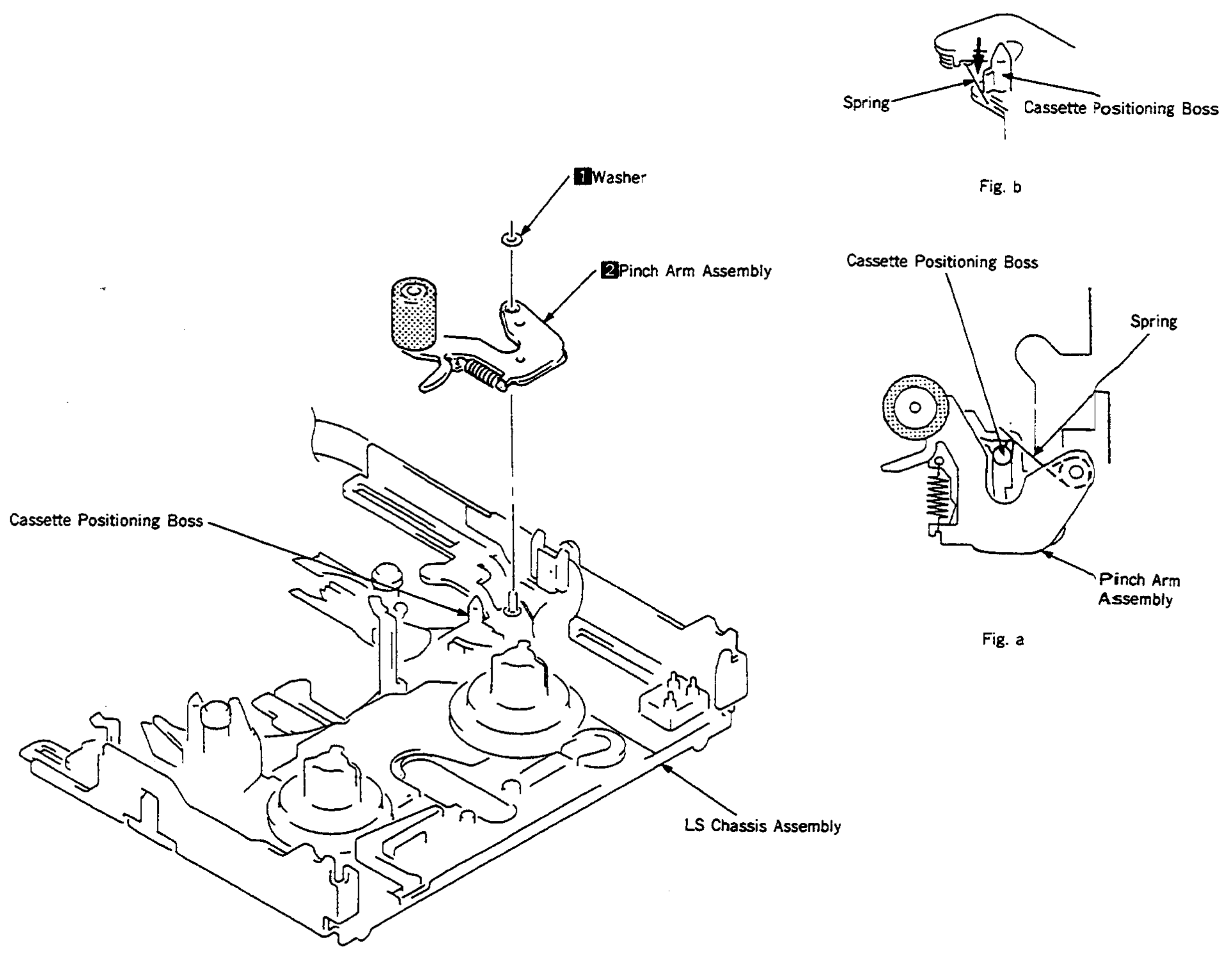


Fig. 13

LS CHASSIS ASSEMBLY (Fig. 14)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Remove a screw 1, TG-5 base holder 2, and LS flexible board 3.
5) Remove a lock washer 4, then the gooseneck as sembly 5.
6) Remove four screws 6, then the LS chassis assembly 7.

2. Mounting

1) Select the USE mode.
2) Confirm that the T hard claw and the outsert on the back of LS chassis are positioned as shown in Fig. a. (The T hard claw must be higher than corner ⓐ of chassis hole.) If not high, turn the outsert in the arrow direction while pushing the T hard claw from LS chassis to the chassis.
3) Sliding the GL slider, align the top edge of long hole ⓑ in GL slider with the edge face ⓒ of LS chassis hole as shown in Fig. b.
4) Mount the LS chassis assembly 7 on the chassis.

Note : At this time, aligh a dowel ⓓ on LS chassis with a long hole ⓔ of No.7 guide on chassis, a long hole of GL slider with a GL arm pin, a groove of LS cam plate with an LS arm pin respectively as shown in Fig. c and d.

5) Tighten four screws 6.
6) Mount the LS flexible board 3 and TG-5 base holder 2,then tighten the screw 1.
7) Mount the Gooseneck assembly 5 and fix it with a washer 4.

Note : Using the mode selector, confirm that loading and unloading are performed smoothly.

8) Referring to 3-2, mount the protector base assembly.
9) Referring to 3-1, mount the Retainer, Gooseneck assembly.
10) Referring to 1-1, mount the cassette compartment assembly.

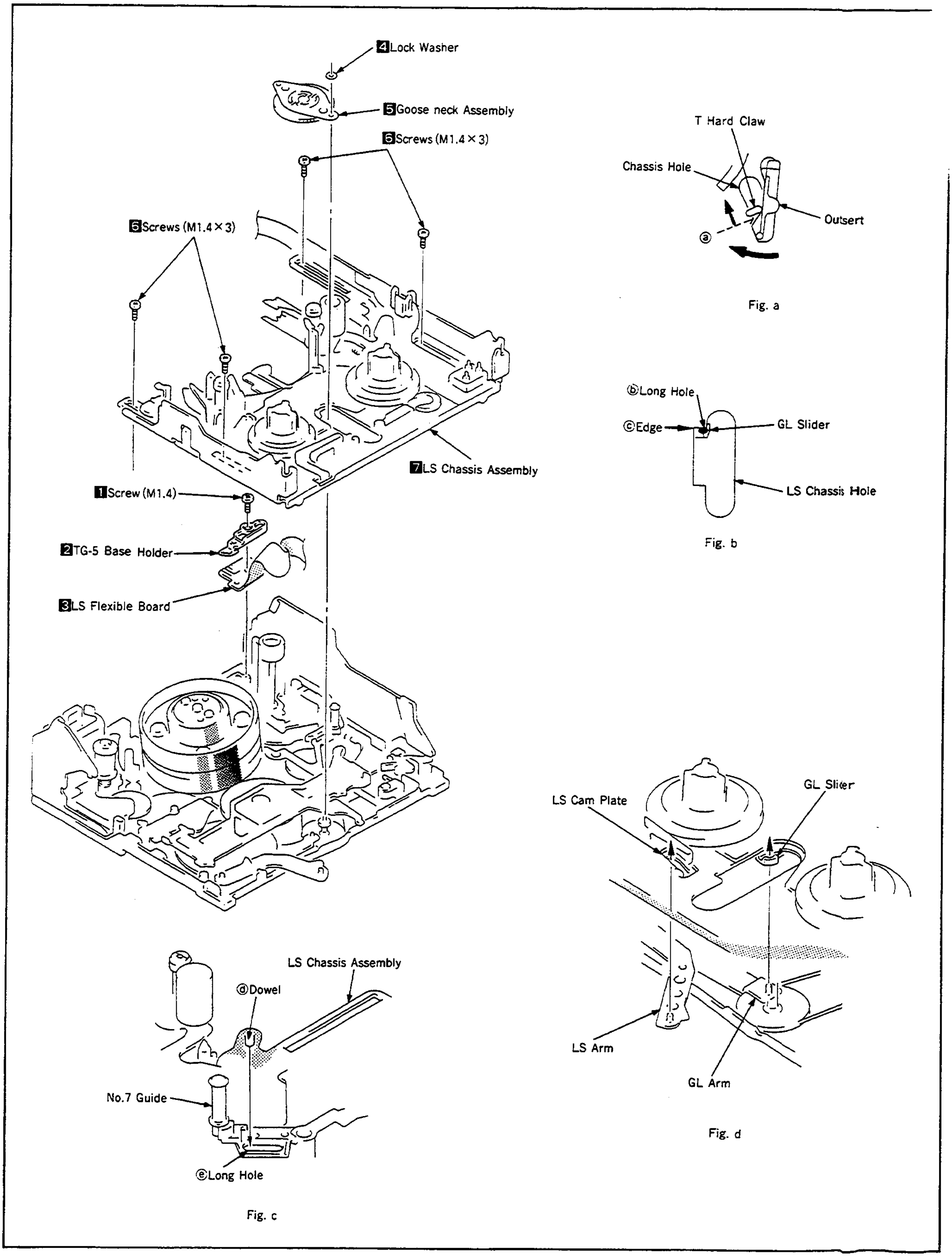


Fig. a

Fig. b

Fig. c

Fig. d

Fig. 14

3- GUIDE BASE T ASSEMBLY AND GUIDE BASE S ASSEMBLY (Fig. 15, 16)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Push in the GL slider 1 toward the arrow Ⓐ, and remove the guide base T assembly 2 and guide base S assembly 3 from the guide rail respectively as shown in Fig. 15.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T sofr assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

6) Turning the guide base T assembly 2 and guide base S assembly 3 respectively, align the shaft to hole to remove as shown in Fig. a.

2. Mounting

1) Turning the guide base T assembly 2 and guide base S assembly 3 respectively, align the shaft with a hole to mount as shown in Fig. a (Fig. 15).
2) On the back side of chassis, insert the guide arm T assembly 4, guide arm S assembly 5 and GL slider 1 from position shown in Fig.b to position shown in Fig. c. Also, aligning the guide base T assembly 2 and guide base S assembly 3 with the respective guide rails, push in the GL slider 1 toward the arrow Ⓑ as shown in Fig. 16.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.

Note : At this time, confirm that the T soft assembly is surely engaged with the T soft arm.

6) Referring to 1-1, mount the cassette compartment assembly.

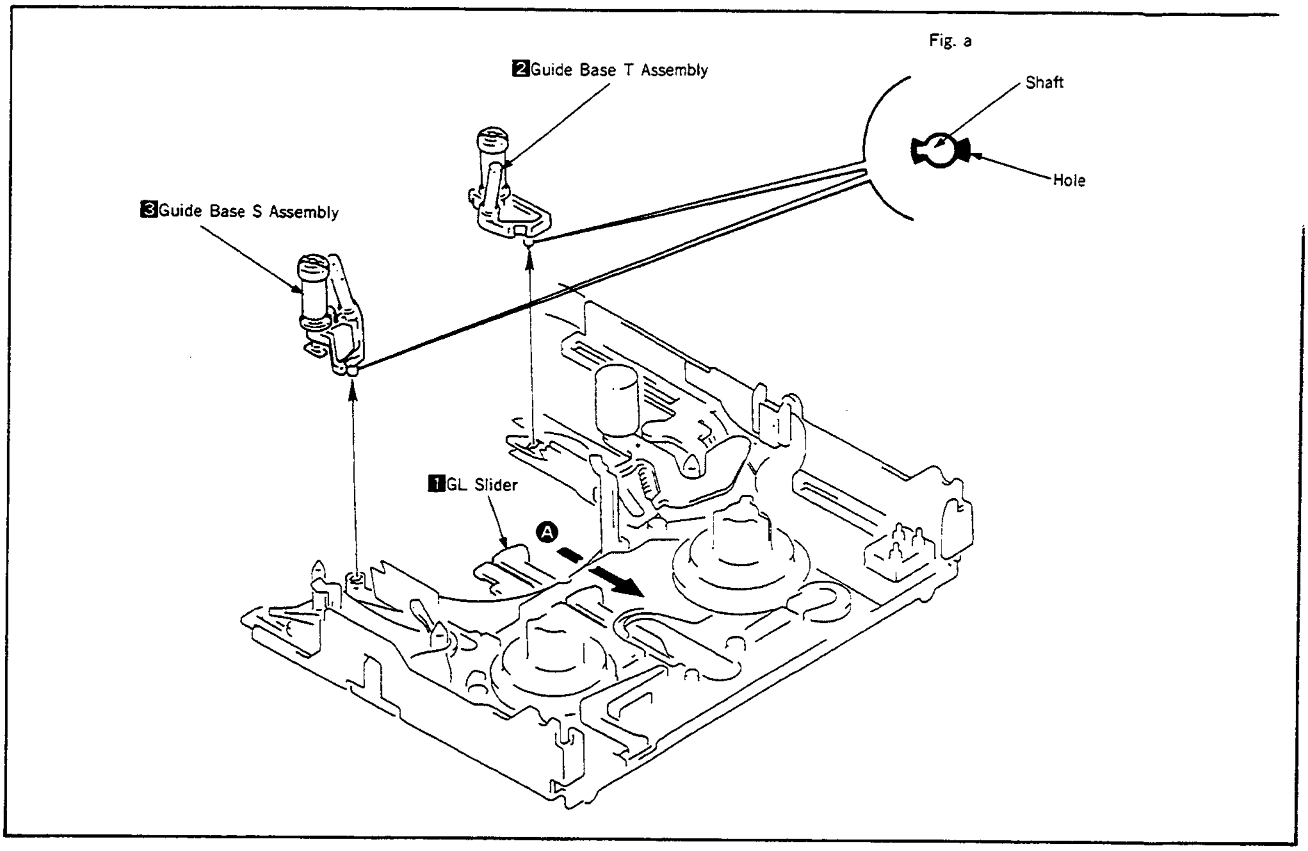


Fig. a
2 Guide Base T Assembly
Shaft
Hole
3 Guide Base S Assembly
1 GL Slider
A

Fig. 15

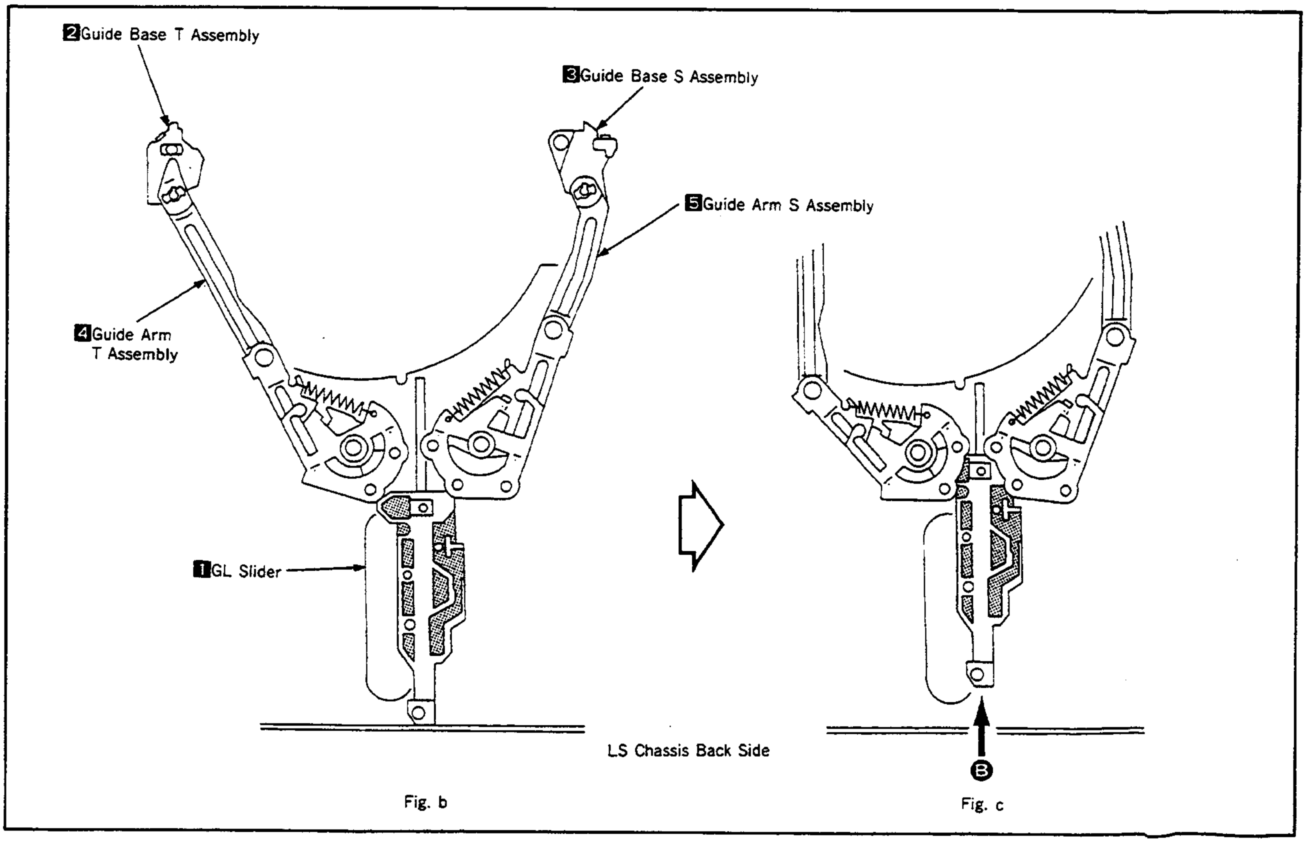

2 Guide Base T Assembly
3 Guide Base S Assembly
5 Guide Arm S Assembly
4 Guide Arm T Assembly
1 GL Slider
LS Chassis Back Side
B
Fig. b
Fig. c

Fig. 16

3 GUIDE ARM T ASSEMBLY AND GUIDE ARM S ASSEMBLY (Fig. 17)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-8, remove the guide base T assembly and guide base S assembly.
6) Remove lock washers ❶, then the guide arm T assembly ❷ and guide arm S assembly ❸ respectively from the back side of chassis.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assmbly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

2. Mounting

1) Mount the guide arm T assembly ❷ and guide arm S assembly ❸, then fix them with a lock washer ❶ respectively.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

2) Referring to 3-8, mount the guide base T assembly, guide-base S assembly and GL slider.
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

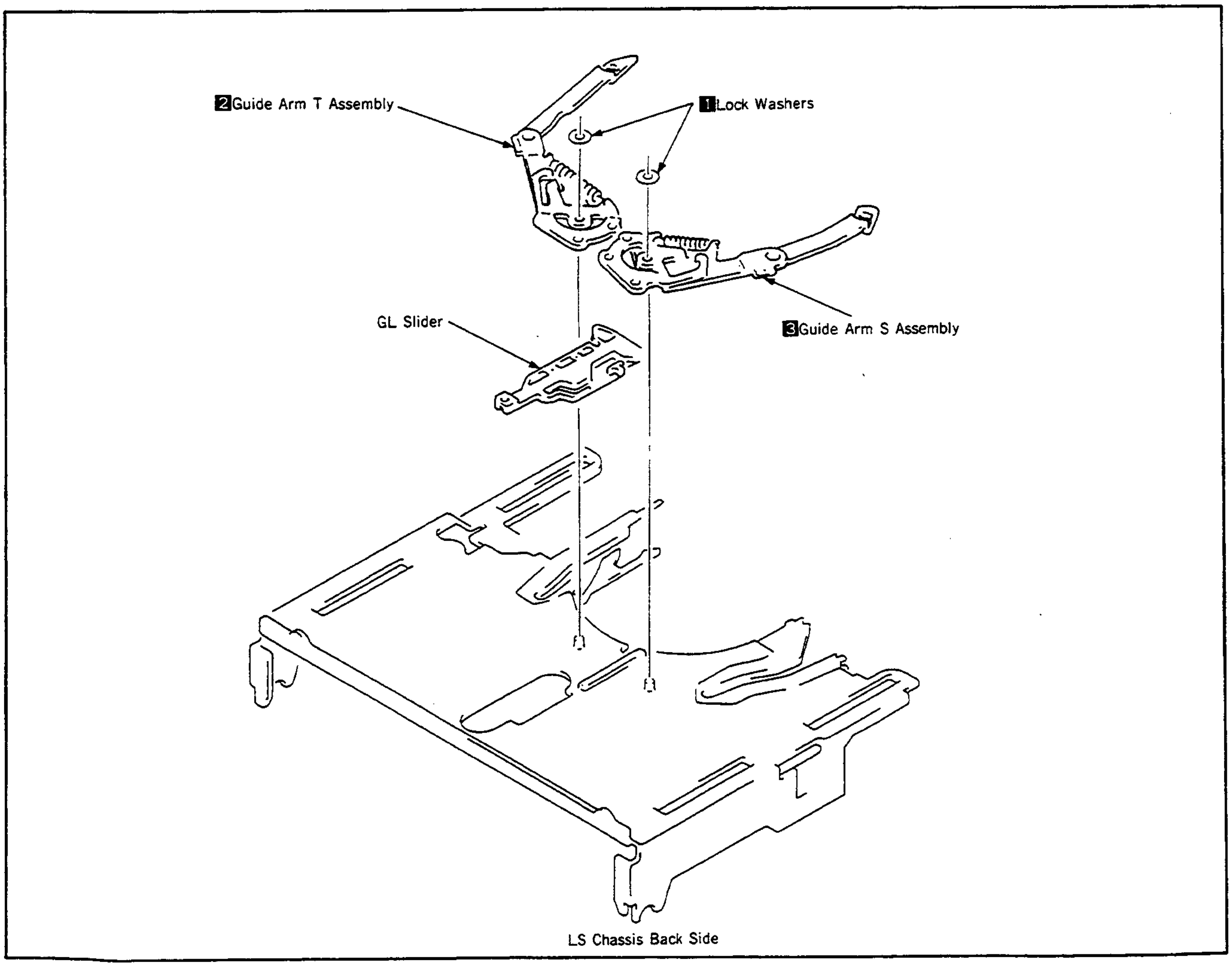


Fig. 17

3-10. SUPPLY REEL TABLE ASSEMBLY AND TG-1 ARM ASSEMBLY (Fig. 18)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-8, remove the guide base S assembly.
6) Remove a screw ❶, then the string ❷ from the supply reel table assembly ❸. For easy removal of string block ❹, insert a flat-blade screwdriver into a groove ⓐ and push it up (Fig. a).
7) Remove the supply reel table assembly ❸.
8) Remove a tension coil spring ❺.
9) Turn the TG-1 arm assembly ❻ up to a portion ⓒ of LS chassis hole in the arrow 🅐 direction so that its tab ⓑ can be disengaged (Fig. b).

2. Mounting

1) Pushing the S soft brake ❼ toward the arrow 🅑, mount thesupply reel table assembly ❸.
2) Route the string ❷ under the TG-1 arm asembly ❻, andinsert the tab ⓑ of TG-1 arm assembly into the LS chassis hole ⓒ, then turn the TG-1 arm assembly in the reverse direction of arow 🅐 (Fig. b).
3) Wind the string ❷ along the groove of supply reel t assembly ❸ (Fig. a).

Note : Do not curl the string extremely. Also, avoid adhesion oil, otherwise the image will be distorted.

4) Using the FWD B.T. adjusting driver (Ref. No. J-15), shift the string block ❹ toward the arrow 🅒 and tighten the screw ❶ (Fig. a).
5) Engage the tension coil spring ❺ to the chassis hook.

Note : Confirm that the string ❷ is surely wound around the groove of supply reel table assembly ❸ (Fig.a).

6) Referring to 3-8, mount the guide base S assembly.
7) Referring to 3-7, mount the LS chassis assembly.
8) Referring to 3-2, mount the protector base assembly.
9) Referring to 3-1, mount the Retainer, Gooseneck assembly.

Note : At this time, confirm that the T soft assembly is surely engaged with the T soft arm. (Refer to 3-5 Take-up Reel Table Assembly and Take-up Soft Assembly.)

10) Referring to 1-1, mount the cassette compartment assembly.

Note : Referring to 3-22, adjust the tension regulator position.

Note : Referring to 3-23, adjust the forward back tension.

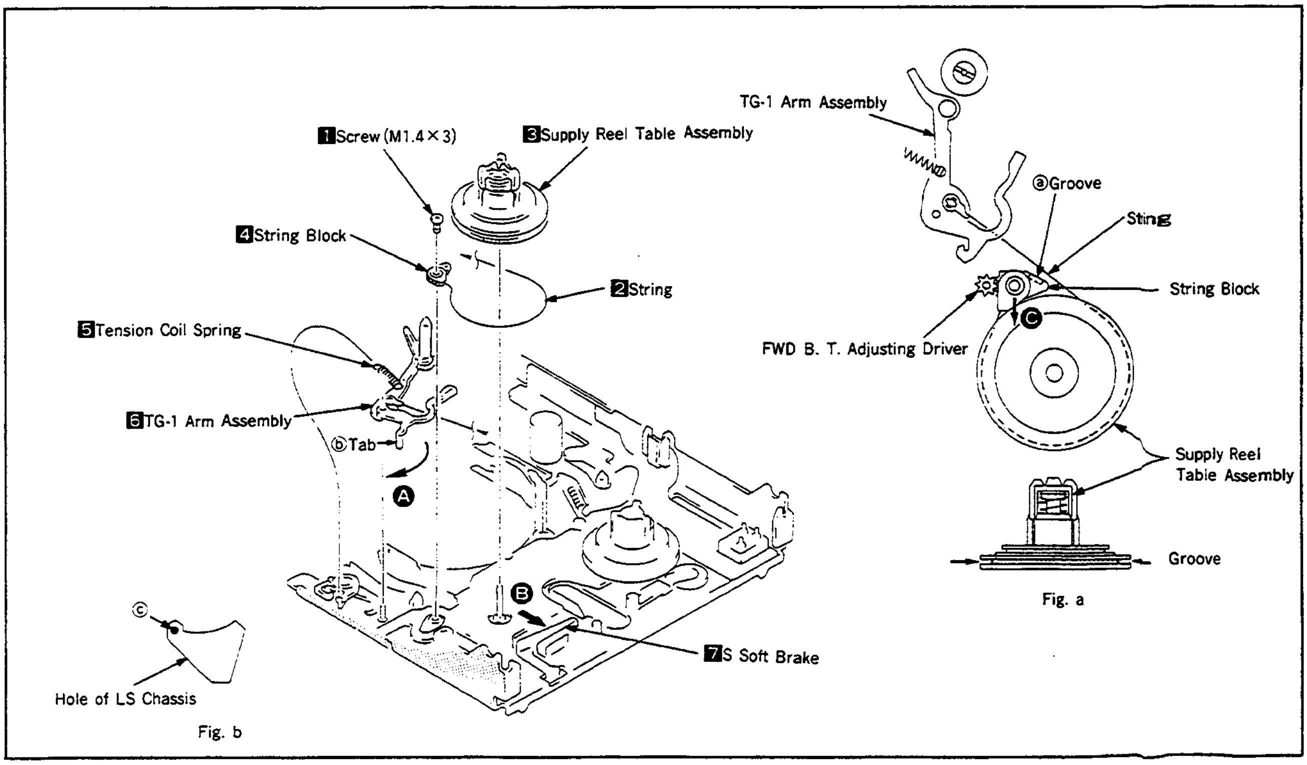


Fig. 18

3 . TG-2 ROLLER ASSEMBLY (Fig. 19)

1. Removal

1) Remove the TG-2 roller assembly **1** .
2) Remove a compression coil spring **2** .

2.Mounting

1) Insert a compression coil spring **2** into the boss on chassis.
2) Rotate gently the TG-2 roller assembly **1** until the screw is engaged.

3. Presetting of TG-2 Roller Height (Fig. a)

1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to 3. 3 ± 0. 05mm.

Note : After adjustment, perform 4. TAPE PATH ADJUSTMENT.

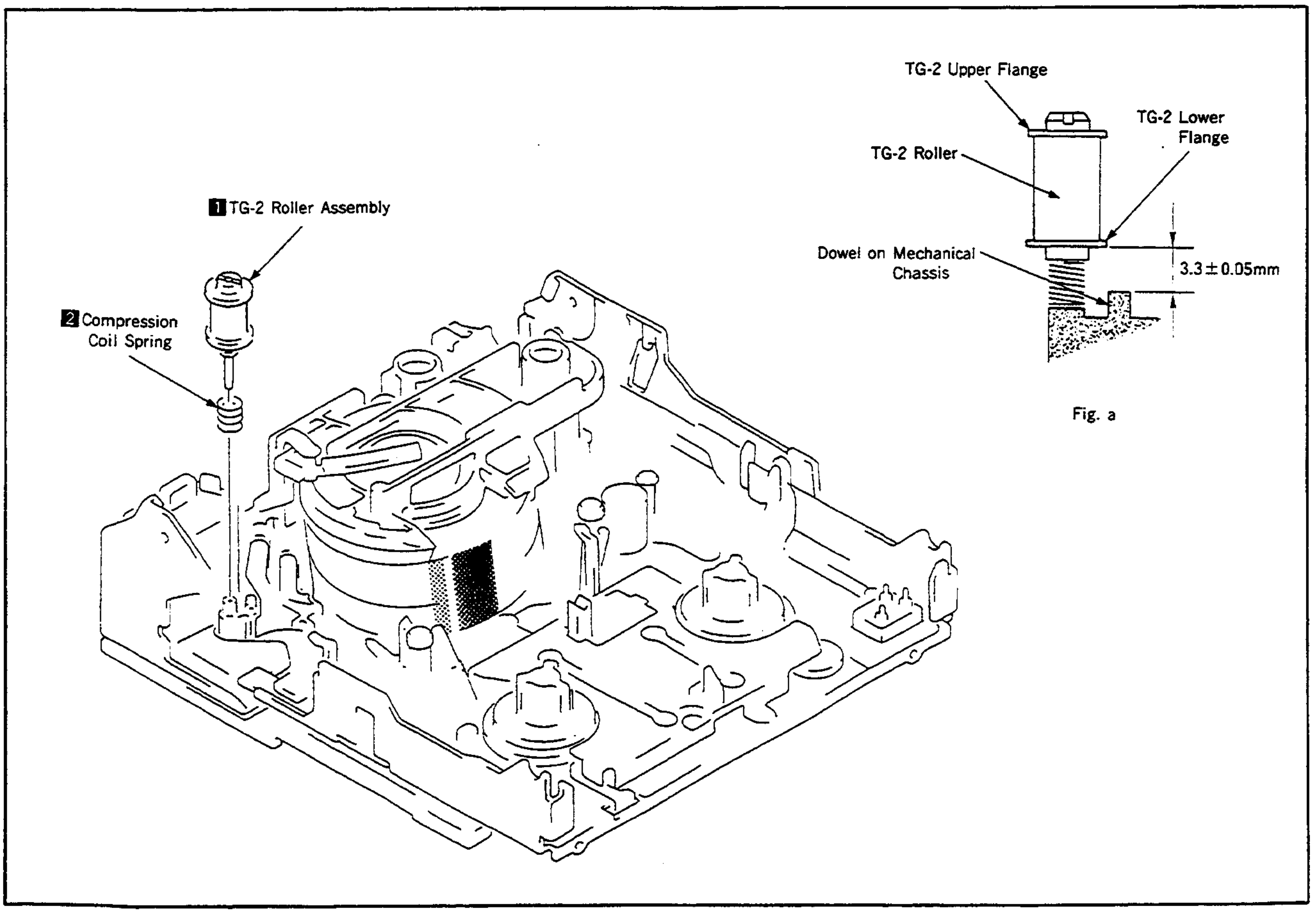


Fig. a

Fig. 19

3-12. TG-7 ARM ASSEMBLY (Fig. 20)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Raise a portion ⓐ of TG-7 arm Leaf spring ❶ in arrow direction with a flat-blade screwdriver or tweezers to disengage the tab from the chassis, then remove the TG-7 arm Leaf spring as shown in Fig. a.
6) Remove the TG-7 assembly ❷ from the shaft of mechanical-chassis.

2. Mounting

1) Mount the TG-7 arm assembly ❷ to the shaft of mechani chassis.
2) Mount the TG-7 arm Leaf spring ❶ to the mechanicalcha sis.
   * Push in the tab of Leaf spring until it clicks into a detent ofchassis (Fig. a).
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartmnet assembly.

Note : After mounting, perform 4. TAPE PATH ADJUSTMENT.

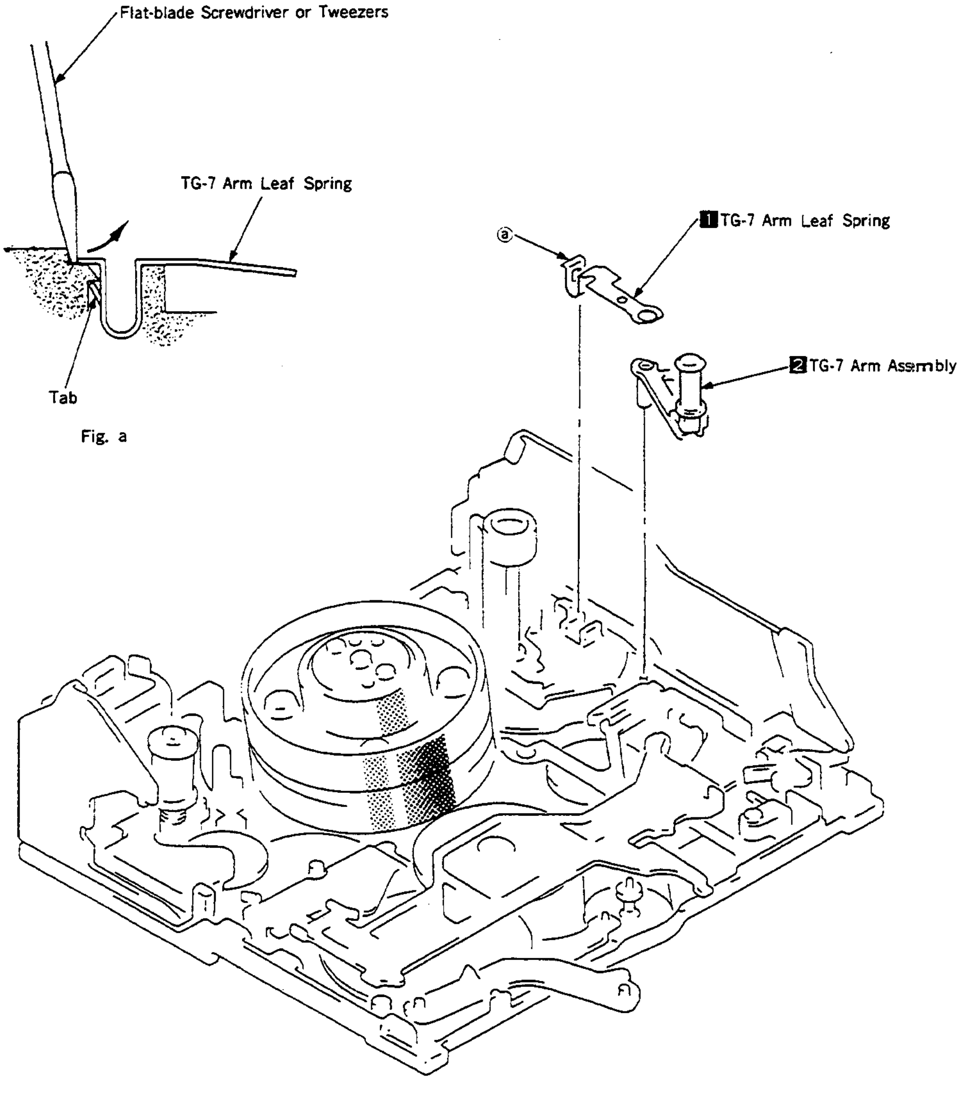


Fig. 20

3 . LM MOTOR ASSEMBLY (Fig. 21)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Select the [LOAD] mode (at the position where the FF arm assembly is not above the screw ❶).
6) Remove two screws ❶, then the LM motor assembly ❷.

2. Mounting

1) Aligning the dowel ⓐ of LM motor assembly ❷ with the hole ⓑ of mechanical chassis, mount the LM motor assembly with its hole ⓒ inserted into the mechanical chassis shaft ⓓ.
2) Tighten two screws ❶.
3) Referring to 3-7, mount the LS chassis assembly.
4) Referring to 3-2, mount the protector base assembly.
5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
6) Referring to 1-1, mount the cassette compartment assembly.

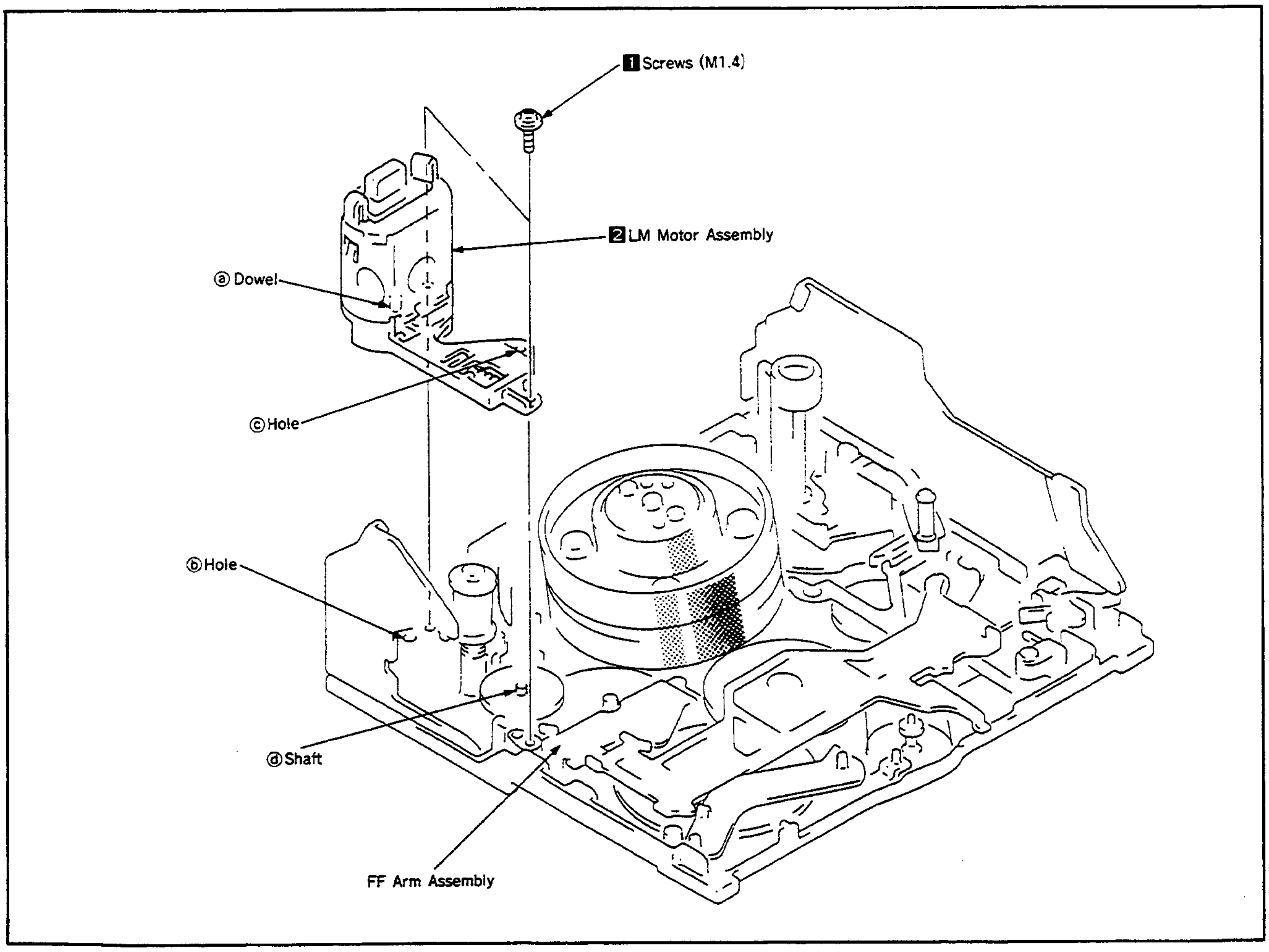


Fig. 21

3-14. LS ARM (Fig. 22)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the proctector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Remove the LS arm ❶ from the shaft of mechanical chassis.

Note : Take care not to drop the LS roller ❷.

2. Mounting

1) Mount the LS arm ❶ meeting with mechanical chassis sh and cam groove.

Note : Move the LS arm ❶ in arrow direction to confirm that the LS roller ❷ is surely inserted.

2) Referring to 3-7, mount the LS chassis assembly.
3) Referring to 3-2, mount the protector base assembly.
4) Referring to 3-1, mount the Retainer, Gooseneck assembly.
5) Referring to 1-1, mount the cassette compartment assembly.

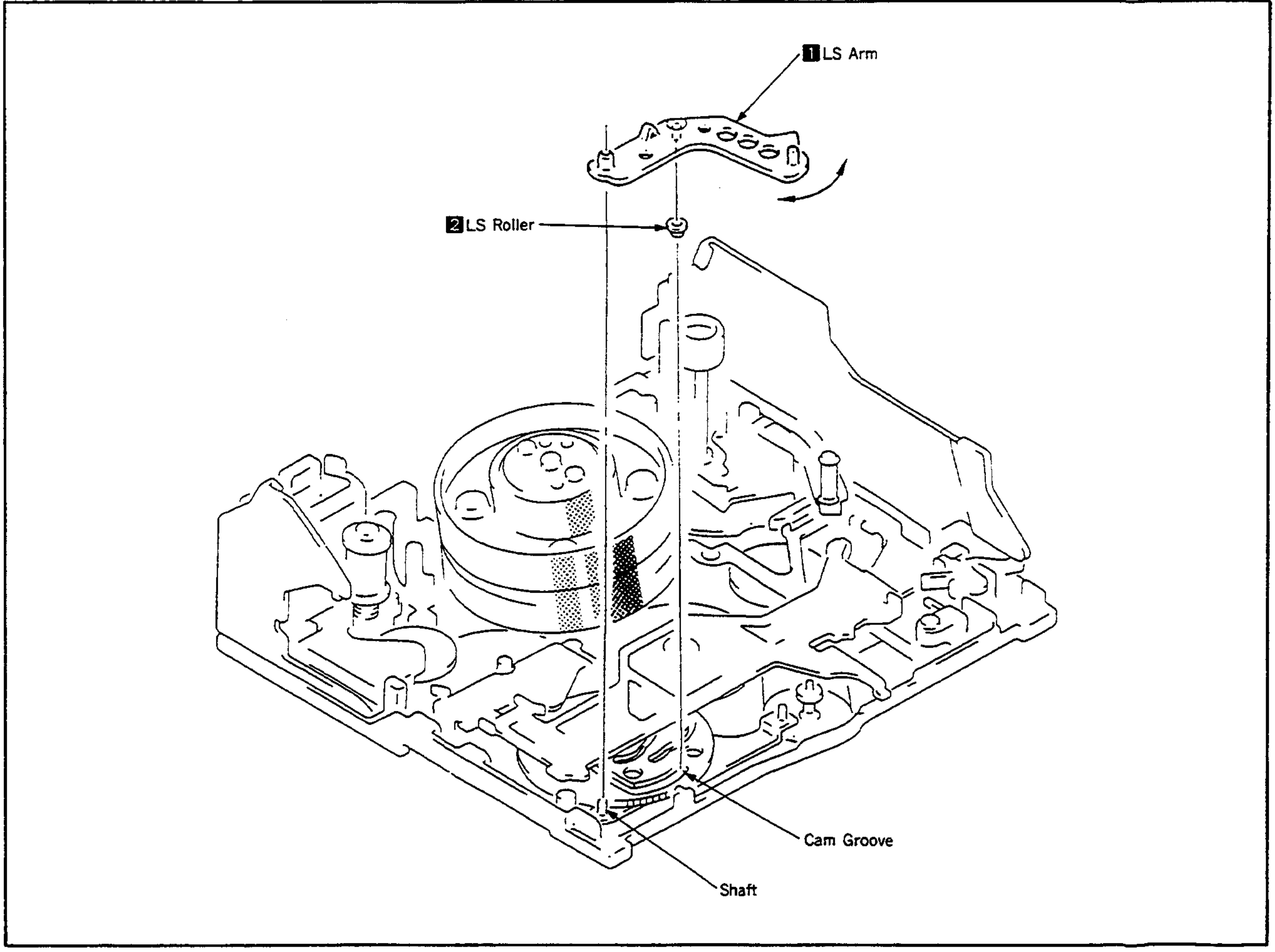


Fig. 22

. M SLIDER ASSEMBLY (Fig. 23)

Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Remove two screws **1**, then the gear holder **2**.
6) Remove two lock washers **3**, then the M slider assembly **4**.

2. Mounting

1) Mount the M slider assembly **4**, aligning long holes ⓐ and ⓑ of M slider assembly with shafts ⓒ and ⓓ of mechanical chassis, and a long hole ⓔ with shaft ⓕ of press arm assembly, and also shaft ⓖ with outer groove ⓗ of cam respectively.
2) Mount two lock washers **3**.
3) Mount the gear holder **2** with its outserts ⓘ and ⓙ inserted into holes in the mechanical chassis.
4) Tighten two screws **1**.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-2, mount the protector base assembly.
7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
8) Referring to 1-1, mount the cassette compartment assembly.

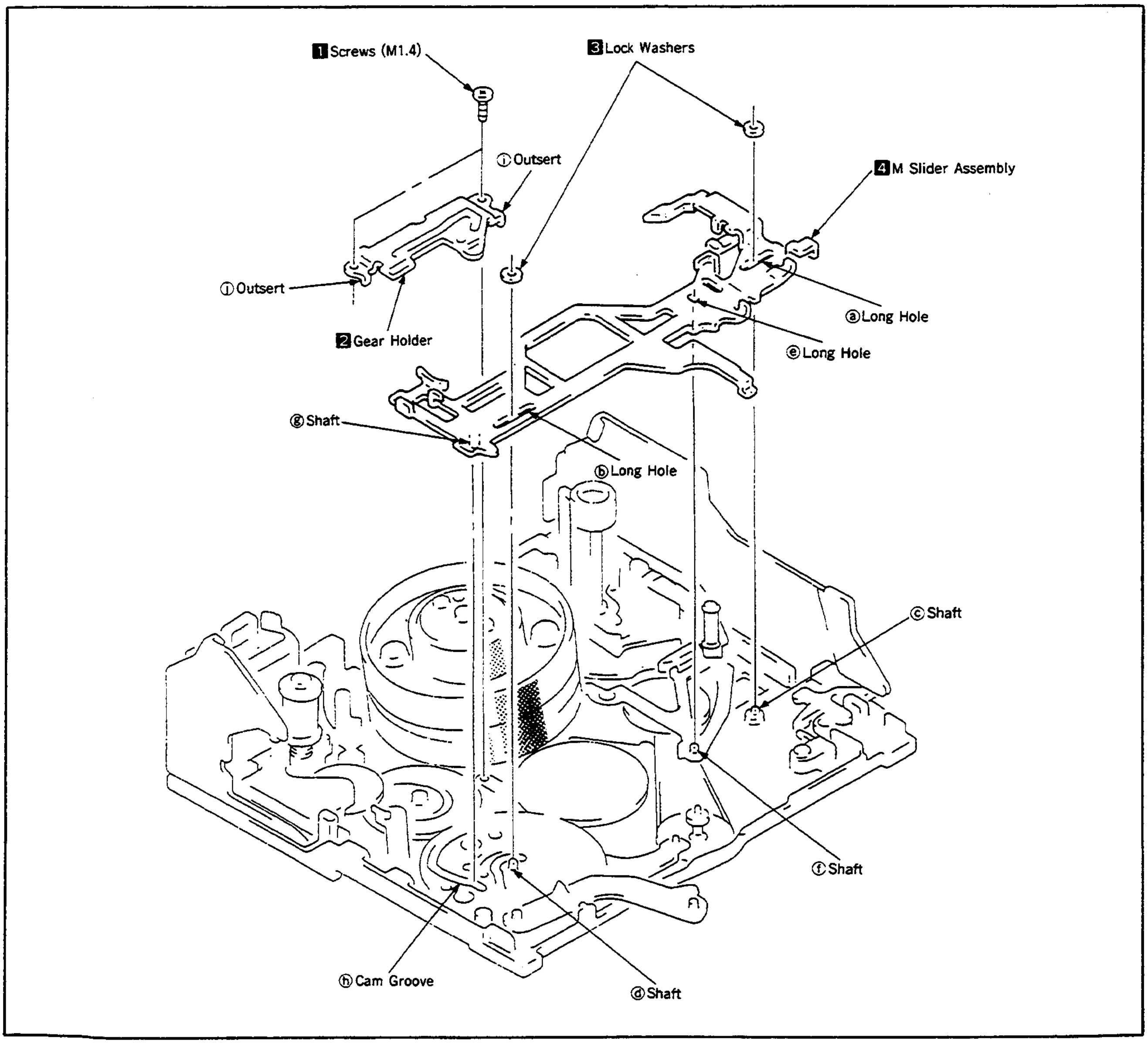


Fig. 23

3-16. PINCH PRESS ARM ASSEMBLY (Fig. 24)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-3, remove the drum assembly.
5) Referring to 3-7, remove the LS chassis assemvly.
6) Referring to 3-15, remove the M slider assembly.
7) Remove a lock washer **1**, then pinch press arm assembly **2**.

2.Mounting

1) Mount the pinch press arm assembly **2**, inserting its sh ⓐ into the cam groove ⓑ of HC drive arm, and hole ⓒ in the shaft ⓓ of mechanical chassis.
2) Mount the lock washer **1**.
3) After mounting, shift the pinch press arm assembly toward the arrow direction.
4) Referring to 3-15, mount the M slider assembly.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-3, mount the drum assembly.
7) Referring to 3-2, mount the protector base assembly.
8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
9) Referring to 1-1, mount the cassette compartment assembly.

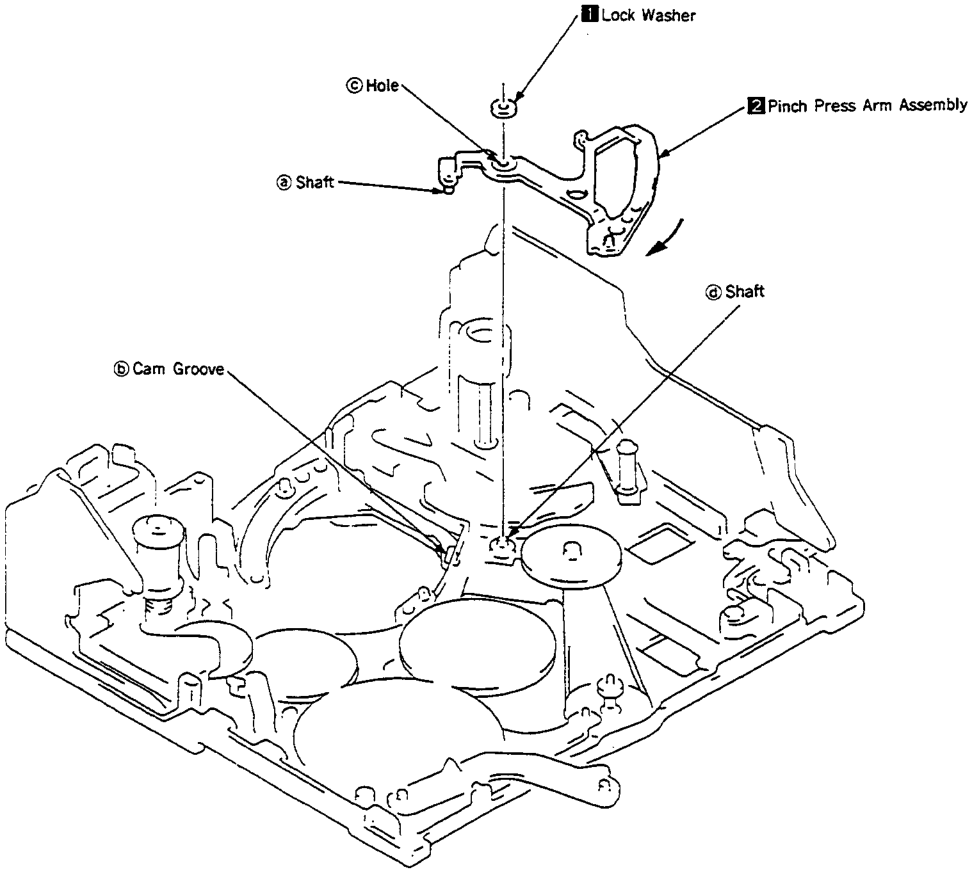


Fig. 24

. CAM (Fig. 25)

emoval

Referring to 1-1, remove the cassette compartment assembly.
Referring to 3-1, remove the Retainer, Gooseneck assembly.
Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Remove the cam ❶.

2. Mounting

1) Referring to 3-13, remove the LM motor assembly.

Note : Take care not to allow grease of LM motor assembly to stick to the TG-2 roller assembly.

2) Mount the cam ❶, aligning its center hole with shaft of mechanical chassis, and the cam groove with the shaft of GL arm assembly. At this time , make sure that the ▲ mark on L gear B is aligned with that on the cam and also a recess is aligned with the phase aligning hole respectively as shown in Fig. a.

Note : Apply grease to the cam groove if it scarecely remains.

3) Mount the LM motor assembly.
4) Referring to 3-15, mount the M slider assembly.
5) Referring to 3-14, mount the LS arm assembly.
6) Referring to 3-7, mount the LS chassis assembly.
7) Referring to 3-2, mount the protector base assembly.
8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
9) Referring to 1-1, mount the cassette compartment assembly.

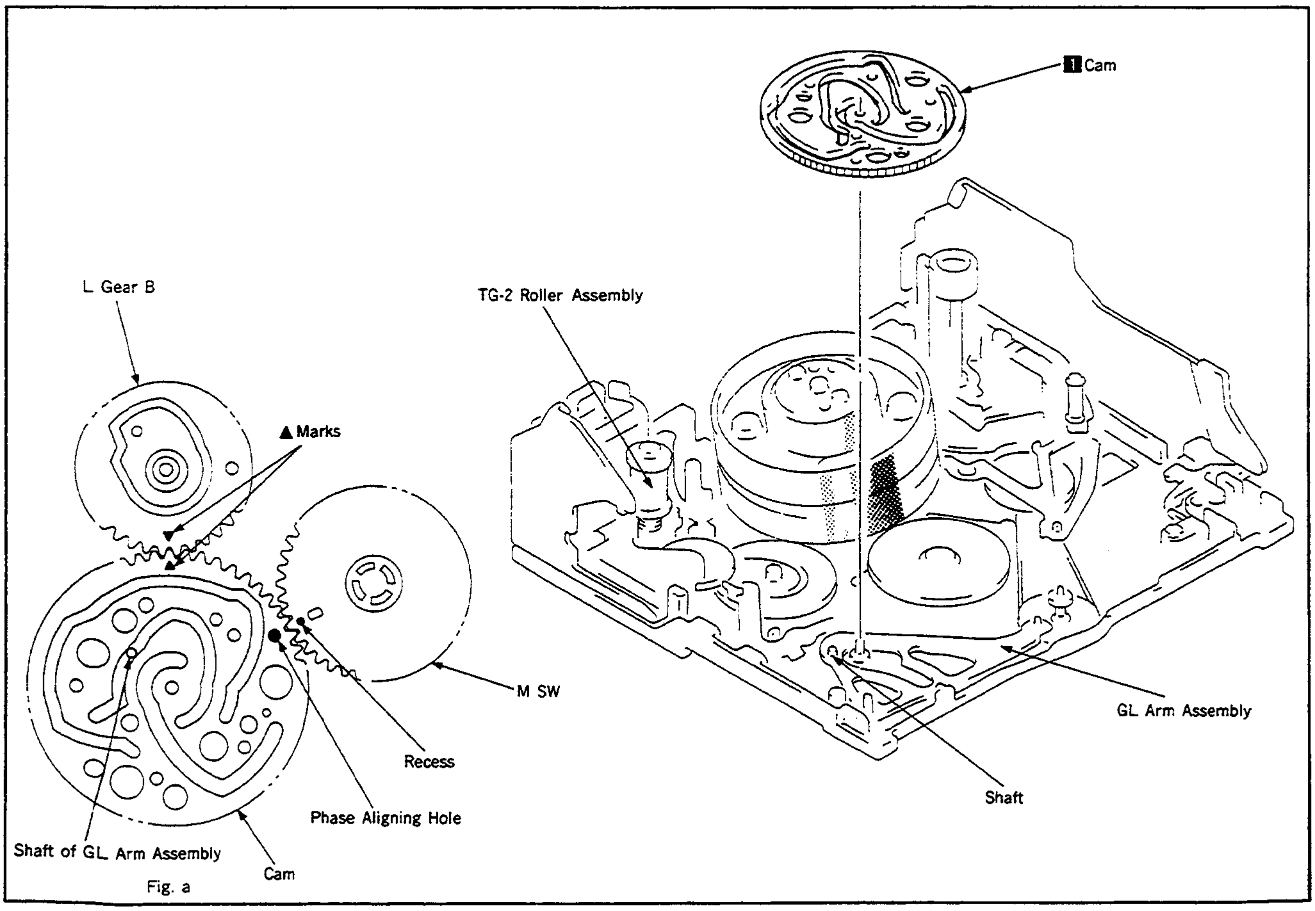


Fig. a

Fig. 25

3-18. GL ARM ASSEMBLY (Fig. 26)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Referring to 3-17, remove the cam.
8) Remove the GL arm assembly ❶.

2. Mounting

1) Mount the GL arm assembly ❶ with its hole ⓐ inserted in the shaft ⓑ of mechanical chassis.
2) Referring to 3-17, mount the cam.
3) Referring to 3-15, mount the M slider assembly.
4) Referring to 3-14, mount the LS arm assembly.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 3-2, mount the protector base assembly.
7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
8) Referring to 1-1, mount the cassette compartment assembly.

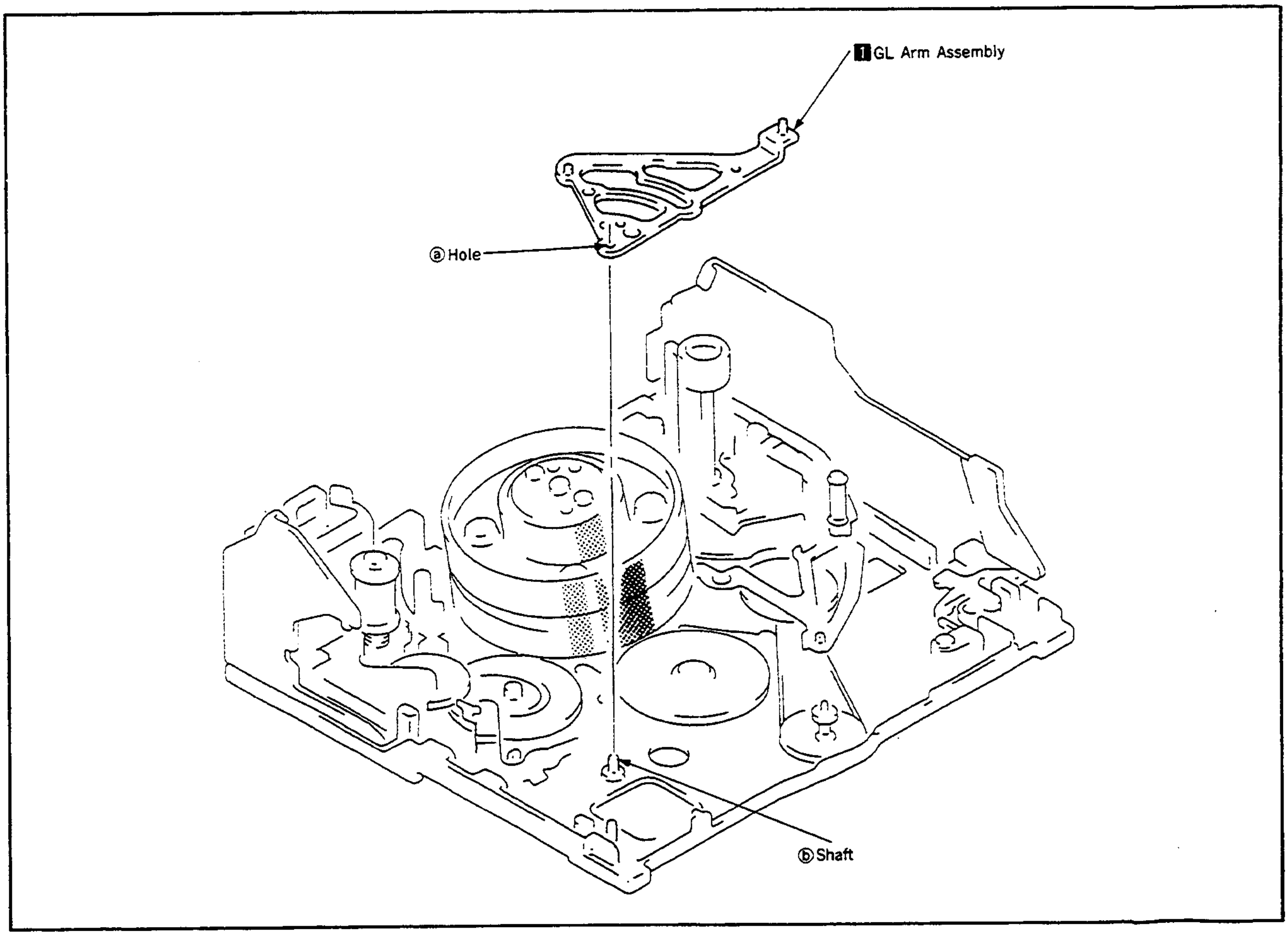


Fig. 26

9. L GEAR A AND L GEAR B (Fig. 27)

Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-7, remove the LS chassis assembly.
5) Referring to 3-14, remove the LS arm assembly.
6) Referring to 3-15, remove the M slider assembly.
7) Referring to 3-17, remove the cam.
8) Referring to 3-13, remove the LM motor assembly.
9) Remove the FF arm assembly ❶.
10) Remove the L gear A ❷.
11) Remove the L gear B ❸.

2. Mounting

1) Insert the L gear B ❸ into the shaft of mechanical chassis. (At this time, the phase aligning mark ▲ should be faced toward the cam mounting shaft ⓐ.)
2) Insert the L gear A ❷ into the shaft of mechanical chassis.
3) Mount the FF arm assembly ❶ with its two shafts inserted into the cam groove of L gear B ❸ and the hole of mechanical chassis.
4) Referring to 3-17, mount the cam.
5) Referring to 3-13, mount the LM motor assembly.
6) Referring to 3-15, mount the M sleder assembly.
7) Referring to 3-14, mount the LS arm assembly.
8) Referring to 3-7, mount the LS chassis assembly.
9) Referring to 3-2, mount the protector base assembly.
10) Referring to 3-1, mount the Retainer, Gooseneck assembly.
11) Referring to 1-1, mount the cassette compartment assembly.

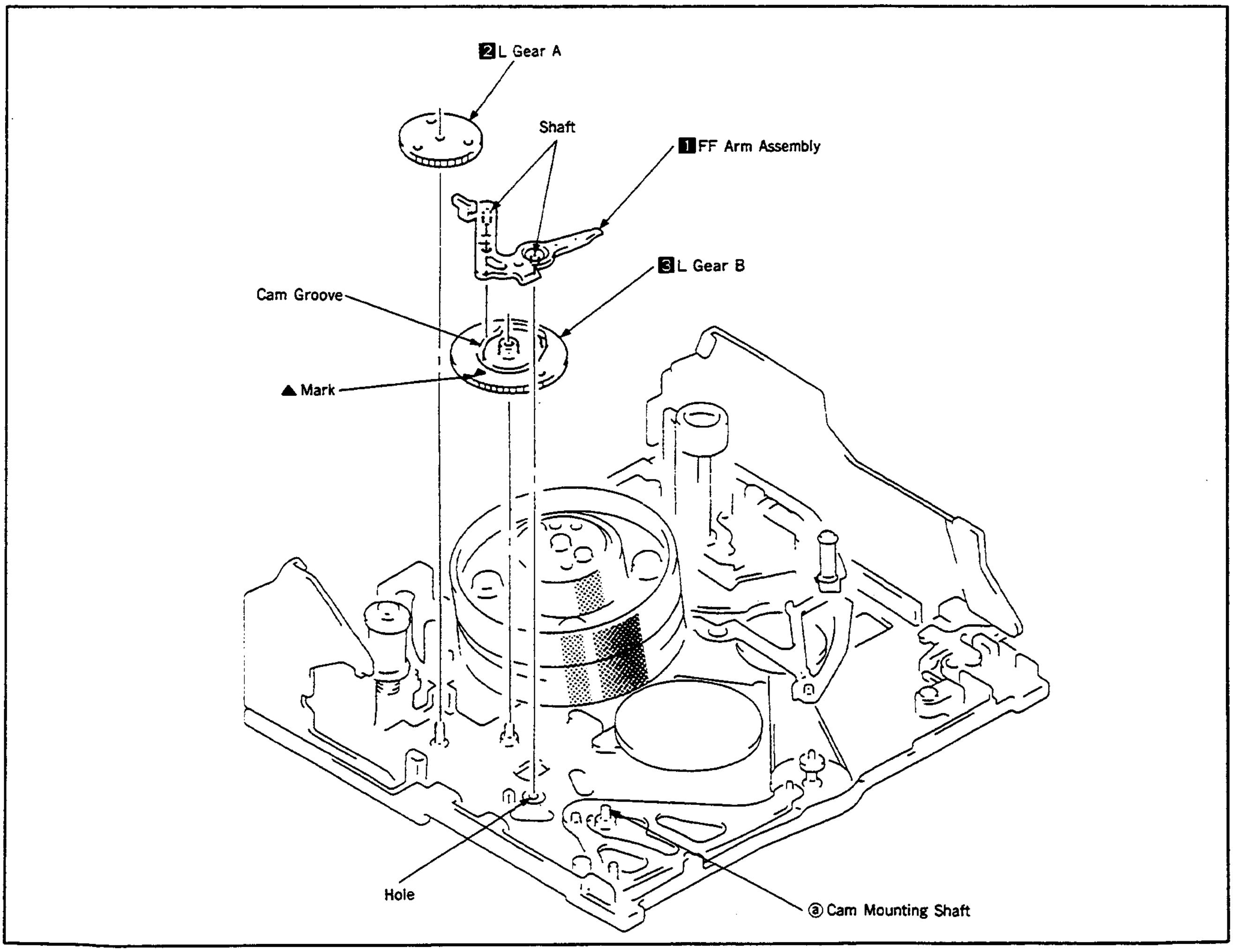


Fig. 27

3-20. RELAY PULLEY AND CHANGE GEAR ASSEMBLY (Fig. 28)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
3) Referring to 3-2, remove the protector base assembly.
4) Referring to 3-3, remove the drum assembly.
5) Referring to 3-7, remove the LS chassis assembly.
6) Referring to 3-14, remove the LS arm assembly.
7) Referring to 3-15, remove the M slider assembly.
8) Referring to 3-17, remove the cam.
9) Referring to 3-18, remove the GL arm assembly.
10) Referring to 3-16, remove the pinch press arm assembly.
11) Remove a lock washer 1, then remove together the Change gear assembly 2, relay belt 3 and relay pulley 4.

2. Mounting

*Give one or two drips of oil to the conversion gear shaft and relay pulley shaft respectively. (Oiling range is under the neck as shown in Fig. a.)

1) Hooking the relay belt 3 to the relay pulley 4 and Change gear assembly 2, mount respective parts.
   *At first, insert the relay pulley into the mechanical chassis-shaft, then the change gear assembly by engaging with the capstan motor gear.

Note : Take care not to damage the Change gear by the capstan motor gear.

2) Mount a lock washer 1.
3) Referring to 3-16, mount the pinch press arm assembly.
4) Referring to 3-18, mount the GL arm asembly.
5) Referring to 3-17, mount the cam.
6) Referring to 3-15, mount the M slider assembly.
7) Referring to 3-14, mount the LS arm assembly.
8) Referring to 3-7, mount the LS chassis assembly.
9) Referring to 3-3, mount the drum assembly.
10) Referring to 3-2, mount the protector base assembly.
11) Referring to 3-1, mount the Retainer, Gooseneck assembly.
12) Referring to 1-1, mount the cassette compartment assembly.

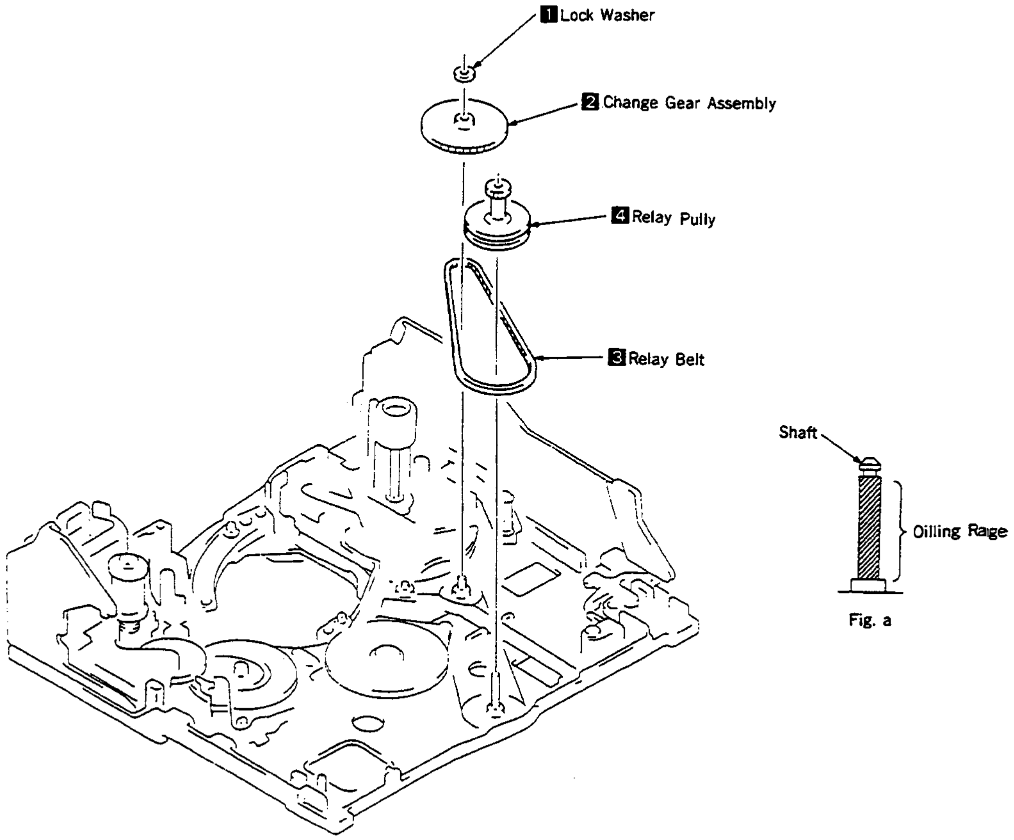


Fig. 28

3-21. ROTARY UPPER DRUM REPLACEMENT

1. Removoal

- If possible, make a recording before removal.

1) Remove the two screws ❶ (Fig. 29).
2) Mount the jig ❷ (Ref. No. J-10) with the two supplied screws ❸, then screw the attached hexagon socket screws ❹ to the jig ❷. The rotary upper drum ❺ will move upward and come off (Fig. 30).

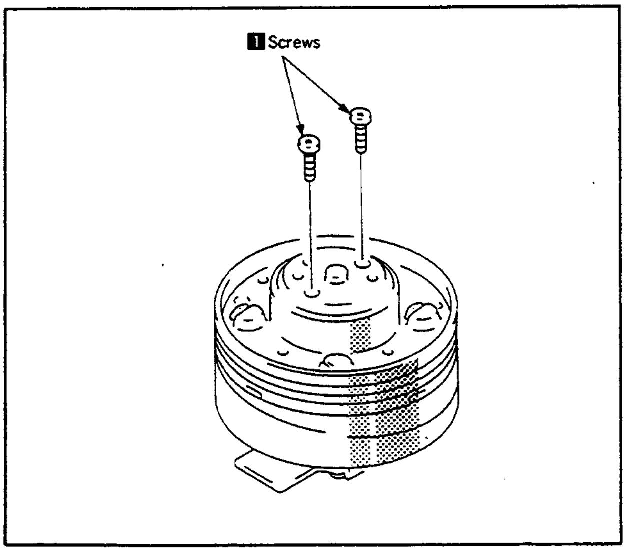


Fig. 29

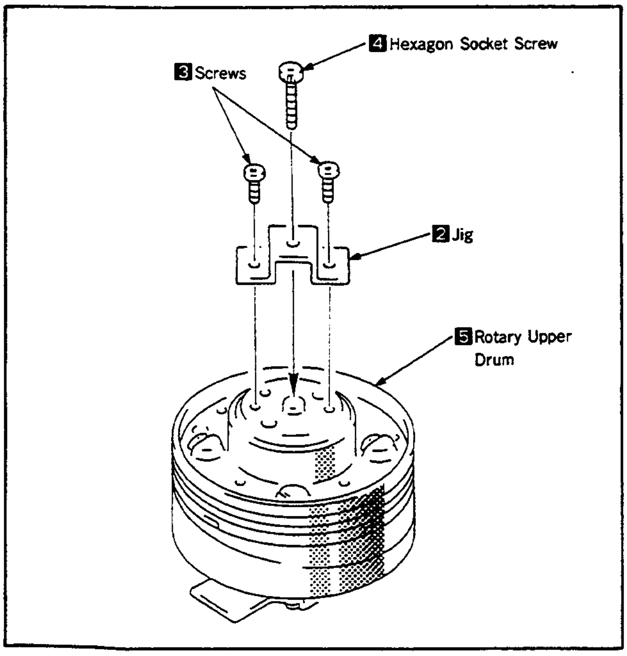


Fig. 30

2. Installation

1) Wipe clean the flange surface and the rotary upper drum ❺ surface that makes contact with it, and confirm that they are free from dirt and scratches.
2) Insert the jig ❻ (Ref. No. J-10) into the drum positioining hole, then set then set the rotary upper drum ❺ by passing the jig through its positioning hole ❼. (Fig.31)
3) Remove the jig ❻ and push down the rotary upper drum ❺ gently by hand. If it does not go all the way down, secure it temporarily by tightening the two screws ❶ alternately (Fig.29).
4) Insert the jig ❻ into the positioning hole ❼ again and confirm that it goes in smoothly. If it does not, loosen the two screws ❶, repeat step 2) of the Removal paragraph and restart the setting procedure.
5) Tighten the screws ❶.

Note : After installing, be sure to perform tape path adjustment as described in section 4.

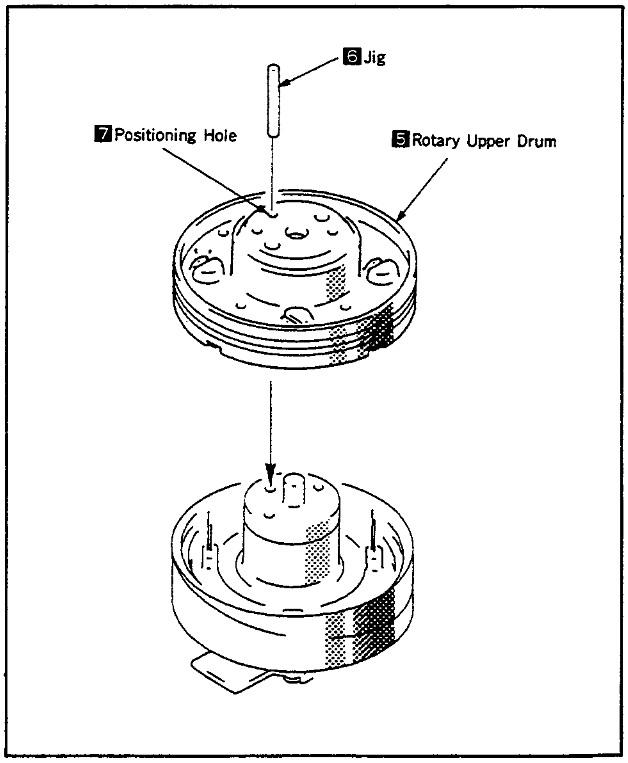


Fig. 31

3-22. ADJUSTMENT OF TENSION REGULATOR POSITION (Fig. 32)

1. Adjustment

1) Set a cassett tape and run the tape in the PB mode.
2) With the tape running, check that the distance from No.1 guide to No. 2 guide upper flange is 4.2 mm.
3) If they are not at the specified positions, perform adjustment in step 4) and subsequent steps.
4) Loosen the screw ❶.
5) If No.1 guide is located inside the specified position, shift the string block toward the arrow Ⓐ using the FWD B.T. adjusting driver (Ref No. J-15). Or, if it is located outside, shift toward the arrow Ⓑ.
6) Tighten the screw ❶.

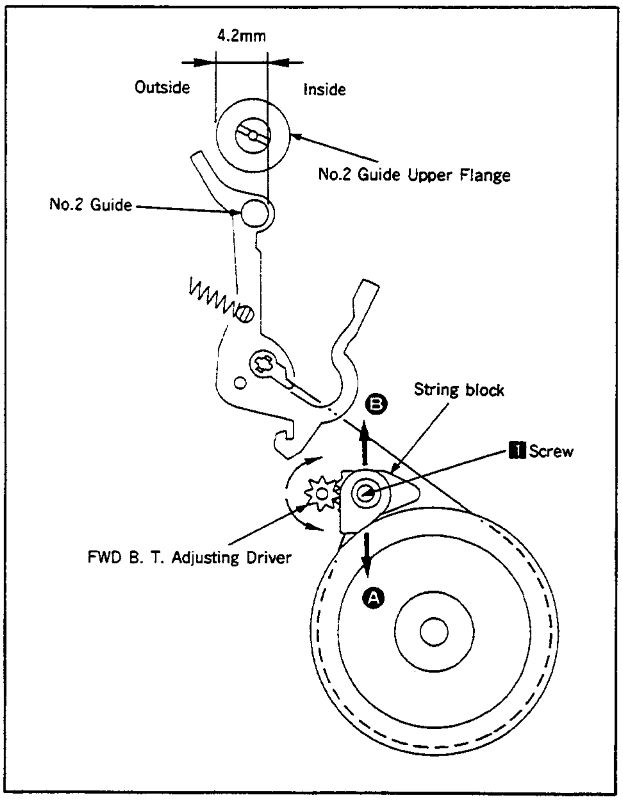


Fig. 32

3-23. FWD BACK TENSION ADJUSTMENT (Fig.33)

1) Select the TEST mode 1 using the adjusting remote controller (Ref No. J-17).
2) Set the torque cassette (Ref No.J-10).
3) Select the FWD mode, and check that the torque of S reel table is 8.5 ~ 11.5 g · cm.
   If it is out of standard, adjust the TG-1 spring hook position using the FWD B.T. adjusting driver (Ref No. J-15).

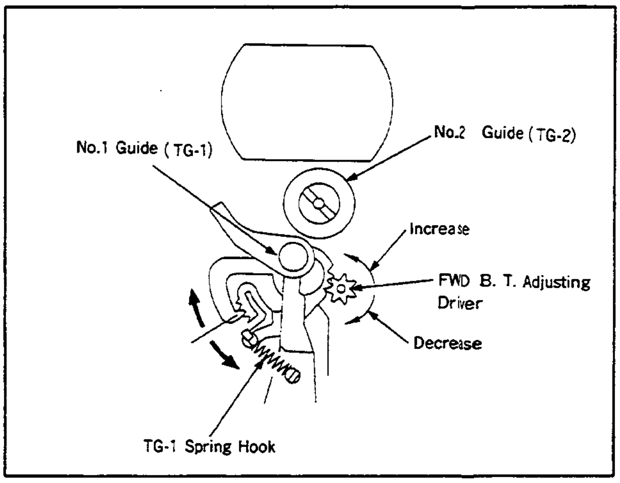


Fig. 33

3-24. REEL TORQUE CHECK

1) Set the torque cassette.
2) Select the FWD mode, and check that the torque fluctuation center of T reel table is 7 ~ 17 g · cm
3) Select the REV mode, and check that the torque fluctuation center of S reel table is 25 ~ 39 g · cm.
4) Select the REV mode, and check that the torque of T reel table is 7 ~ 17 g · cm.
5) If the above data is not satisfied, the tension regulator band, T hard tab or T soft assembly will be faulty. Check them first, and if no abnormality is found, replace respective reel tables.

4. TAPE PATH ADJUSTMENT

The 8mm video system uses ATF (Automatic Track Finding) which instantaneously controls a tape running speed based on 4 types of pilot signals and performs high-precision tracking.

This does away a tracking control knob and allows accurate track tracing.

On the other hand, however, the ATF system has a problem in adjusting the tape path system. That is, if head tracing is out of order a little, the ATF automatically corrects it, which means that perfect adjustment cannot be done.

Therefore, in the A mechanism, the ATF system is forcibly operated to shift a tracking amount constantly (approx. 1/4) by setting the PATH mode with the adjusting remote controller (Ref No.J-16). So, fine tracking adjustment can be easily done. Also, the PATH mode setting varies with the model, and therefore, refer to the Service Manual.

Example) For CCD-FX410 series

Set the adjusting remote controller to the HOLD ON side.

1) Set PAGE : 1, ADDRESS : 00, DATA : 01 to cancel the PROTECT mode.
2) Set PAGE : D, ADDRESS : 01, DATA : 03 to select the PATH mode.

Note : Setting of PATH mode = TRACK SHIFT mode

If the adjusting remote controller (Ref No.J-16) is set to HOLD OFF once, then set to HOLD ON again after mode setting, the display of ADDRESS and DATA changes.

3) After adjustment is over, set DATA : 00, and press the PAUSE buttom on the adjusting remote controller (Ref No. J-16).

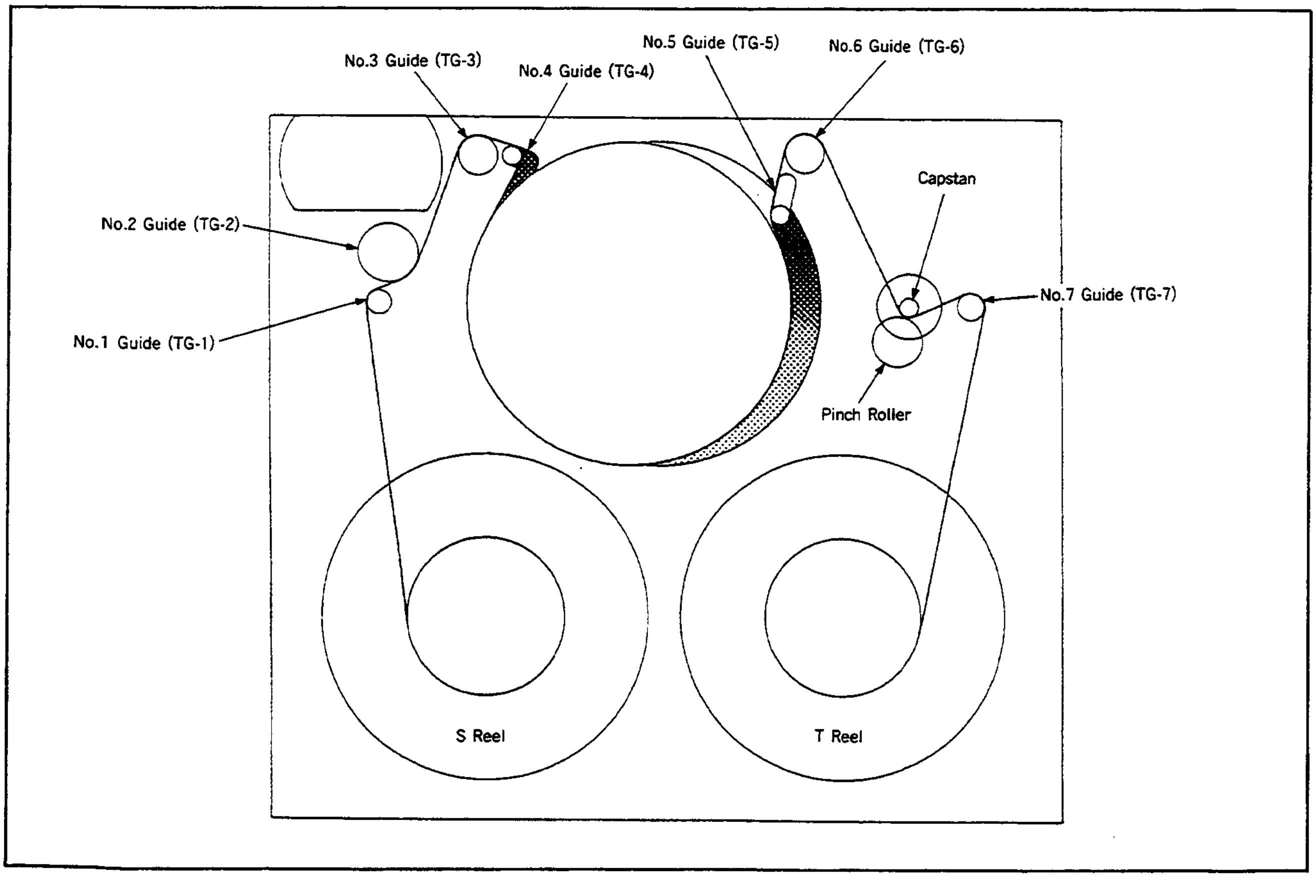


Fig. 34-A

[Note on Adjustment of No.7 Guide (TG-7)]
The height adjustment screw for No.7 guide (TG-7) is located at some distance from the guide (refer to Fig.41).
Therefore, when performing section 4-4. No.7 Guide (TG-7) Adjustment it is convenient to use the alignment tape for tracking (Ref. No. J-6), modified as follows, and perform adjustment in playback mode.

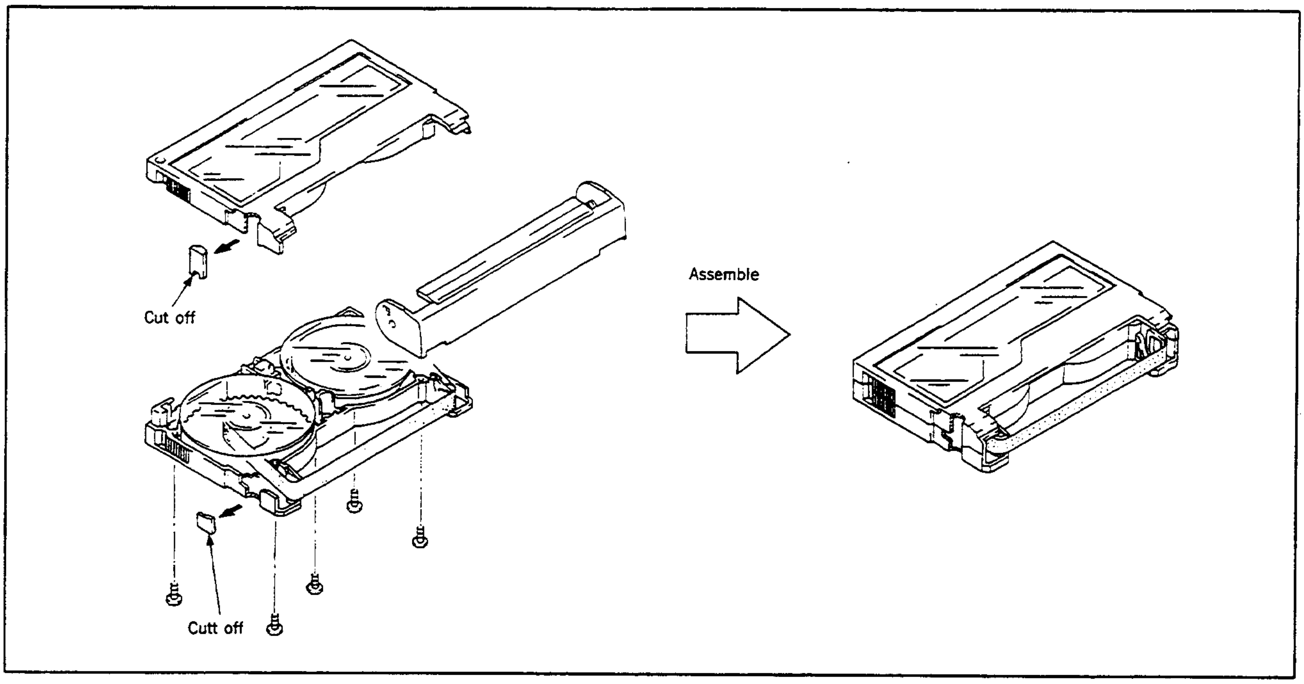


Fig. 34-B

4-1. PREPARATION FOR ADJUSTMENT

1) Clean the tape running surface (tape guides, drum, capstan shaft, pinch roller) (Fig. 34-A).
2) Set the PATH mode using the adjusting remote controller.
3) connect an oscilloscope to the check pin connector of the set.
   Example) For CCD-FX410 series
      CH1 : CN001 pin ③ (PB RF OUT) on CS-31 board
      CH2 : CN001 pin ④ (RF SWP) on CS-31 board
4) Play back a tracking alignment tape (NTSC : WR5-1N, or PAL : WR5-1C).
5) Check that a RF waveform is flat at the inlet and outlet of the oscilloscope (Fig. 35 ⓐ).
   If not flat, make adjustment with the procedures below.
   When the RF waveform is not flat at the inlet/outlet ; See Fig. 35 ⓑ and ⓒ.

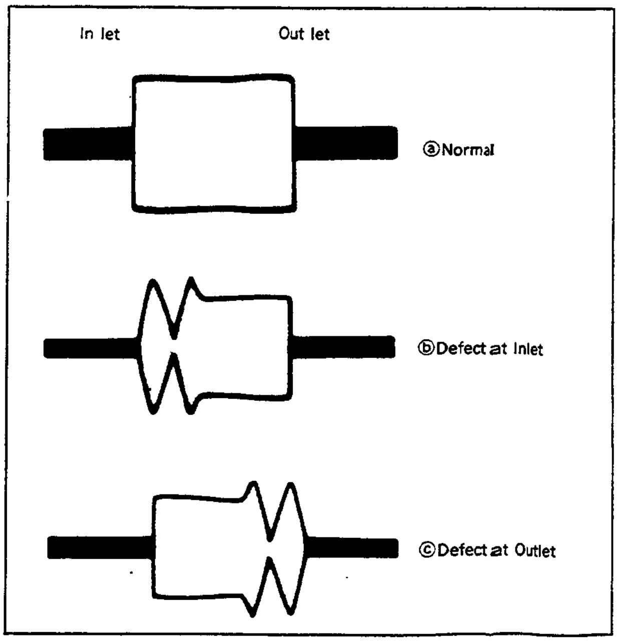


Fig. 35

4-2. TRACKING ADJUSTMENT (Fig. 36, 37)

1) Play back the tracking alignment tape.
2) Loosen the No.3 guide (TG-3) lock screw ❶ and turn the No.3 guide to flatten the waveform at the inlet.
3) Tighten the No.3 guide (TG-3) lock screw ❶ to lock the No.3 guide.
4) Loosen the No.6 guide (TG-6) lock screw ❷ and turn the No.6 guide to flatten the waveform at the outlet.
5) Tighten the No.6 guide (TG-6) lock screw ❷ to lock the No.6 guide. When this is done, make sure that the waveform does not change at the outlet.

Note : Be careful not to loosen the lock screw too much because the guide is easily moved.
: Take care not to allow interference between No.6 guide and drum when tightening the No.6 guide lock screw.

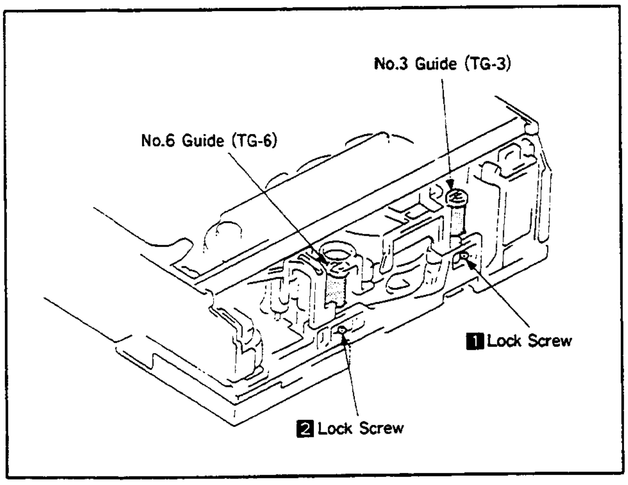


Fig. 36

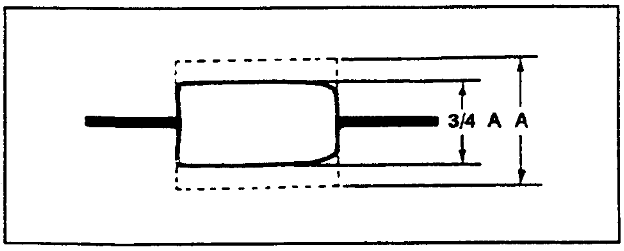


Fig. 37

4-3. No.2 GUIDE (TG-2) ADJUSTMENT

When the No.2 guide has been turned or replaced, perform height presetting before this adjustment.

4-3-1. No. 2 GUIDE (TG-2) HEIGHT PRESETTING (Fig. 38)

1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to 3.3 ± 0.05 mm.

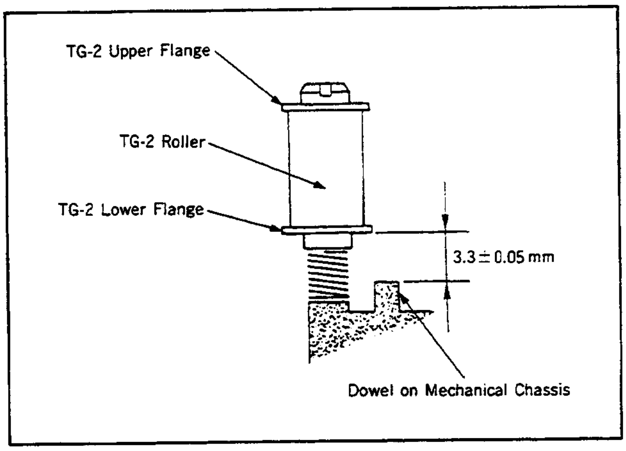


Fig. 38

[Reference]
This A mechanism is equipped with four adjustable guides (TG-2, 3, 6 and 7) . To raise or lower the respective guide rotate the corresponding adjustment screw as shown below.

Guide	Guide adjustment	Rotating direction of adjustment screw
TG-2, 3, 6	Raise	Counterclockwise
	Lower	Clockwise
TG-7	Raise	Clockwise
	Lower	Counterclockwise

4-3-2. No. 2 GUIDE (TG-2) ADJUSTMENT (Fig. 39, 40)

1) Play back a thin tape like the P6-120MP, etc. and set the REV mode.
2) Confirm that the tape is not bent at the lower flange ❷ of the No.2 guide (TG-2) ❶ (Fig. 39). If it is, turn the upper flange ❸ of the No.2 guide (TG-2) clockwise with a screwdriver, lowering it until the tape is straightened.
3) Play back the alignment tape for tracking adjustment.
4) Perform tracking adjustment and trcking fine adjustment as described in sections 4-2.
5) In the track shift mode, CUE/REV the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds.
6) If the waveform is not normal (Fig. 40), turn the upper flange ❸ of the No. 2 guide (TG-2) ❶ 90° counterclockwise and repeat step 5.
   Repeat steps 5) and 6) until a normal waveform is obtained.
   Then, confirm that the tracking waveform has not changed.
   If it has, perform fine adjustment of entrance side tracking and repeat step 5).

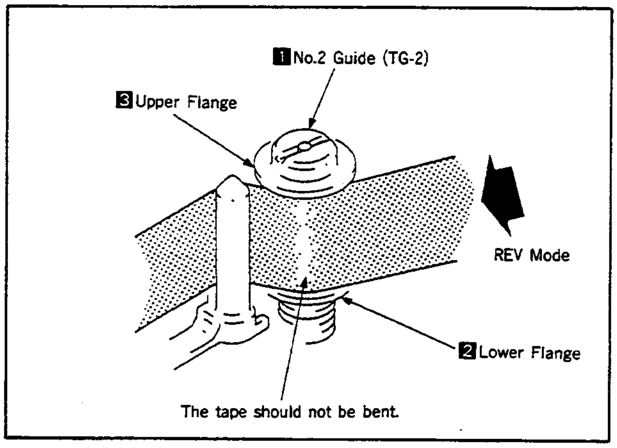


Fig. 39

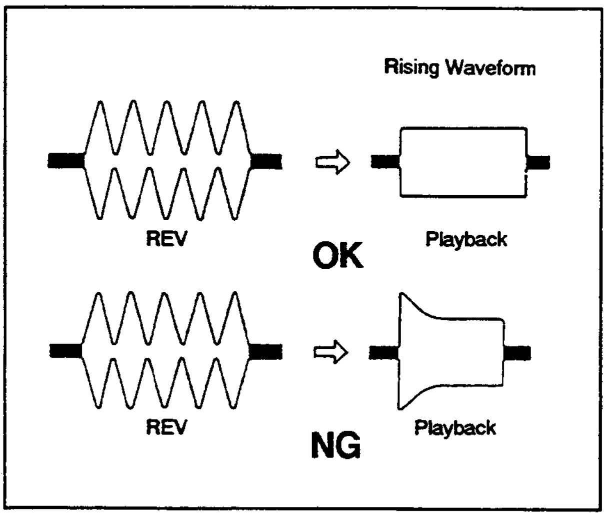


Fig. 40

4-4. No.7 GUIDE (TG-7) ADJUSTMENT (Fig. 41)

Note : This adjustment requires the No. 7 guide adjusting cassetetape (Fig. 34-B).

1) Play back the No.7 guide adjusting cassetetape and set the REV mode.
2) Confirm that the tape is not bent between the No.6 guide (TG-6) ❶ and the capstan ❷. If it is, turn the hight adjusting screw ❹ of the No.7 guide (TG-7) ❸ until the tape is straightened.
3) Set the playback mode again and confirm that the tape is not bent between the capstan ❷ and the hight adjusting screw ❹ of the No.7 guide (specification : 0.5mm or less). If the tape is bent beyond the specification, turn the No.7 guide (TG-7) ❸ until bending is within the specification (0.5mm).
   If in the REV mode tape bending between the No. 6 guide (TG-6) ❶ and the capstan ❷ is 0.3mm or less, adjustment can be considered completed.

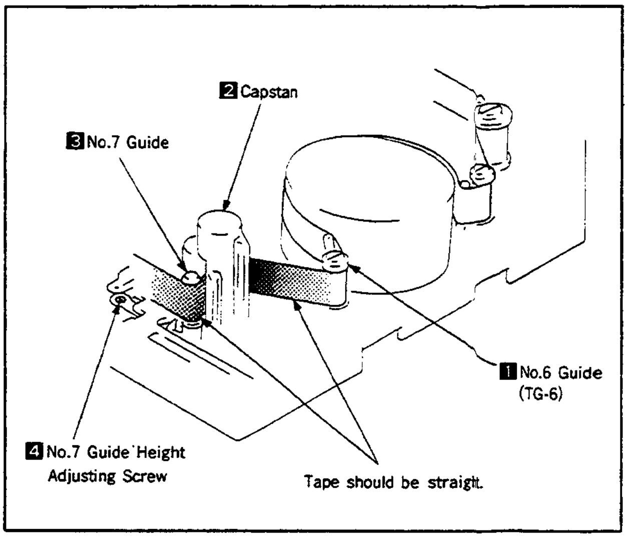


Fig. 41

4-5. CUE AND REV WAVEFORM CHECK (Fig. 42)

1) Play back the alignment tape for tracking adjustment and set the REV mode. Confirm that waveform peaks maintain a constant pitch of 5 seconds or more (Fig. 42). In case pitch is not constant, perform section 4-2.Tracking Fine Adjustment and section 4-4. No.7 Guide Adjustment.
2) Set the CUE mode. Confirm that waveform peaks still maintain a constant pitch of 5 seconds or more (Fig.42).
   Otherwise, perform section 4-2 Tracking Fine Adjustment.

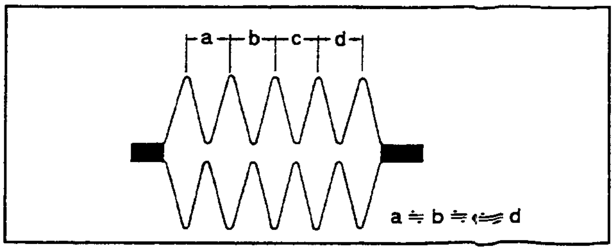


Fig. 42

4-6. CHECK AFTER ADJUSTMENT

4-6-1. TRACKING CHECK

1) Confirm that the amplitude of RF waveform is reduced to approx. 3/4 when the track shift mode is set (Fig. 43).
2) Then, confirm that the minimum amplitude value (EMIN) is 65 % of the maximum value (EMAX) or larger (Fig. 44).
3) Confirm that no large fluctuations occur on the waveform (Fig. 45).

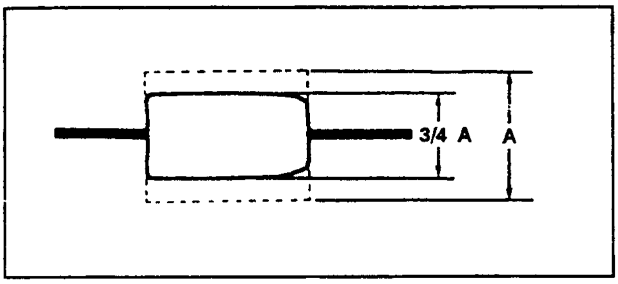


Fig. 43

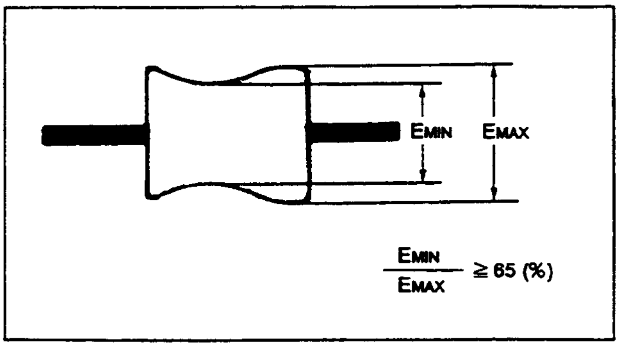


Fig. 44

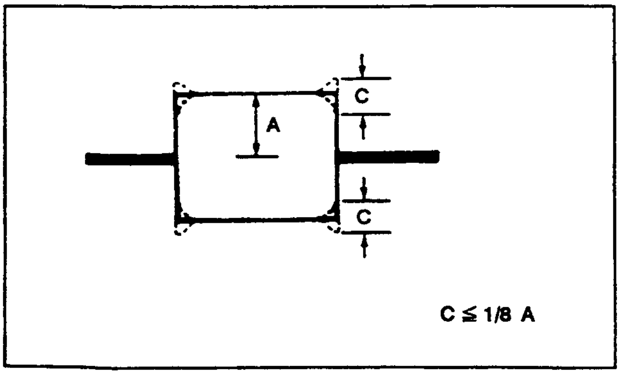


Fig. 45

4-6-2. RISING CHECK (Fig. 46)

1) Play back the alignment tape for tracking adjustment.
2) Cancel the track shift mode.
3) Eject the tape, then load it again.
4) Set the playback mode and confirm that the RF wave form rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller.
5) CUE/REV and FF/REW the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds, Also confirm that the tape is not bent around the pinch roller.
6) Repeat steps 3) to 5) once more.

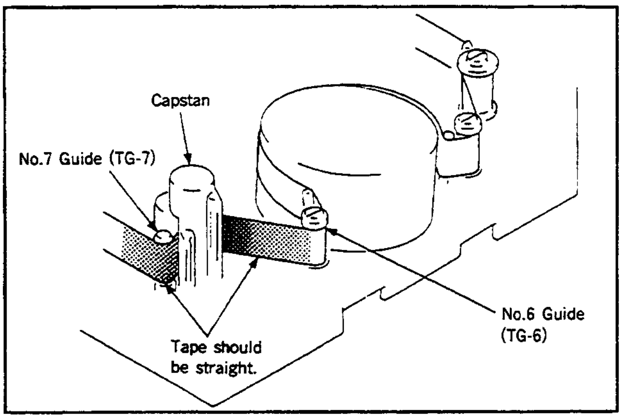


Fig. 46

4-6-3. TAPE PATH CHECK (Fig. 47)

1) Play back a thin tape like the P6-120MP (NTSC) or P5-90MP (PAL), etc. and confirm that no tape rising occurs, and that curling is less than 0.3mm, at the lower flange of the No. 2 guide , the upper flange of the No.3 guide, the upper flange of the No. 6 guide and the No.7 guide upper and lower flanges.
2) Confirm that no tape rising occurs and that curling is less than 0.3mm at the flange of all guide when pressing the FF button in the playback mode to set the CUE mode, or the REW button to set the REV mode.

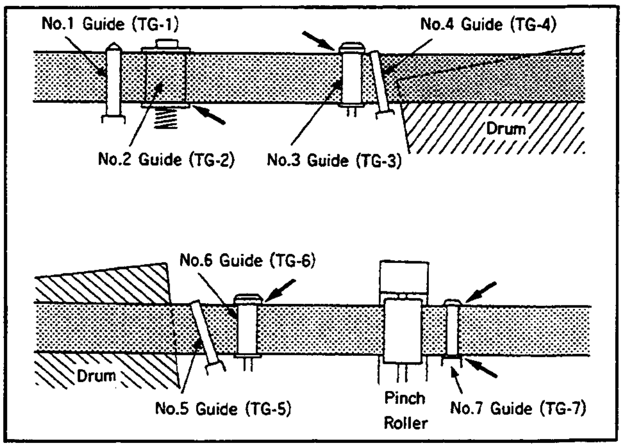


Fig. 47

8mm Video MECHANICAL ADJUSTMENT MANUAL IV

A MECHANISM

SUPPLIMENT-2

Video 8

〈Connection of Mode Selector IV Conversion Connector〉

In use of Mode selector IV conversion connector(J-6082-167-A), there are two different connecting methods depending on the model connected:

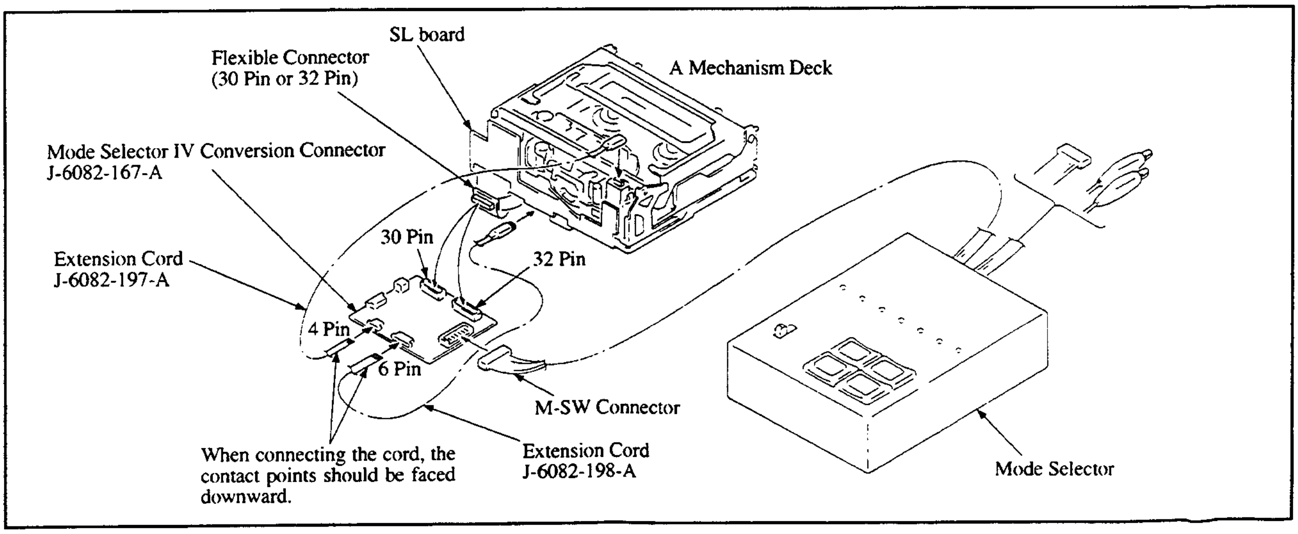
1. CCD-FX series

With the SL board mounted on mechanical deck, connect 30-pin(or 32-pin) connector to 30-pin(or 32-pin) Mode selector IV conversion connector.

(CCD-FX300 series, FX400 series. FX500 series
→ 30-pin connector (FP425 or FP600)
CCD-FX700 series → 32-pin connector (FP477))

2. Models other than above

Connect the extension cord(J-6082-197-A) to loading motor 4-pin connector and extension cord (J-6082-198-A) to mode switch 6-pin connector in mechanical deck, then connect the other end of cord to 4-pin and 6-pin connectors of Mode selector IV conversion connector respectively, as shown below.



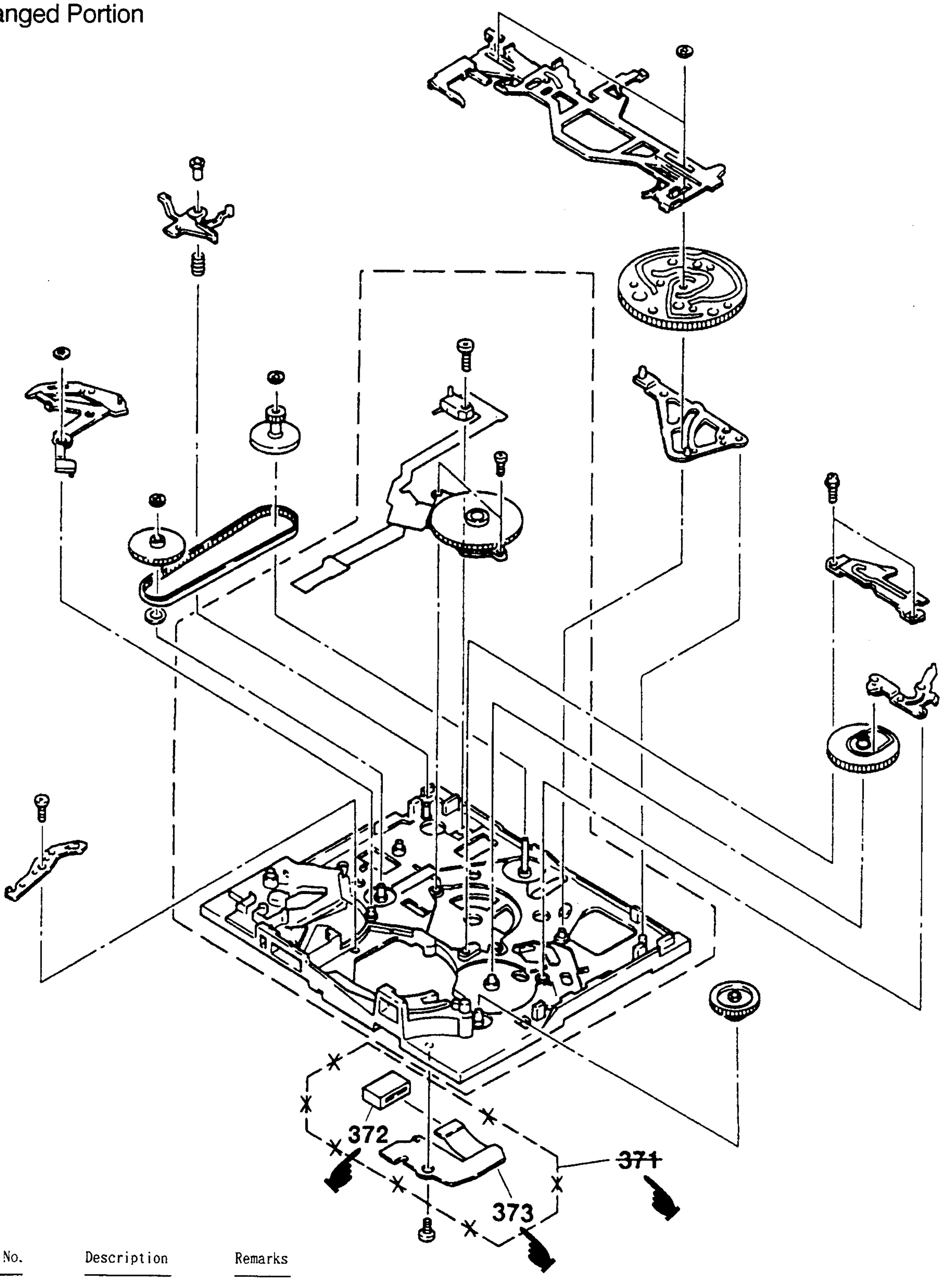
〈CORRECTION〉

P10. 2-4 Service jigs list

		Incorrect		Correct
J-15	FWD B.T adjusting driver	J-6082-182-A	➔	J-6082-187-A

MECHANISM CHASSIS ASSEMBLY (2)

☛ : Changed Portion



Ref.No.	Part No.	Description	Remarks
~~371~~	~~A-7040-311-A~~	~~FP-444 ASSY~~	☛
372	1-691-254-13	CONNECTOR, TRANSLATION 10P	☛
373	1-641-639-13	FP-442 FLEXIBLE BOARD	☛

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